NATIONAL BUREAU OF STANDARDS REPORT

2447

REPORT ON BATTERY ADDITIVES

by the

NATIONAL BUREAU OF STANDARDS

April 16, 1953

(Cont'd)

Part VII

APPENDICES

U. S. DEPARTMENT OF COMMERCE
NATIONAL BUREAU OF STANDARDS

U. S. DEPARTMENT OF COMMERCE

Sinclair Weeks, *Secretary*

NATIONAL BUREAU OF STANDARDS

A. V. Astin, *Director*

THE NATIONAL BUREAU OF STANDARDS

The scope of activities of the National Bureau of Standards is suggested in the following listing of the divisions and sections engaged in technical work. In general, each section is engaged in specialized research, development, and engineering in the field indicated by its title. A brief description of the activities, and of the resultant reports and publications, appears on the inside of the back cover of this report.

Electricity. Resistance Measurements. Inductance and Capacitance. Electrical Instruments. Magnetic Measurements. Applied Electricity. Electrochemistry.

Optics and Metrology. Photometry and Colorimetry. Optical Instruments. Photographic Technology. Length. Gage.

Heat and Power. Temperature Measurements. Thermodynamics. Cryogenics. Engines and Lubrication. Engine Fuels. Cryogenic Engineering.

Atomic and Radiation Physics. Spectroscopy. Radiometry. Mass Spectrometry. Solid State Physics. Electron Physics. Atomic Physics. Neutron Measurements. Infrared Spectroscopy. Nuclear Physics. Radioactivity. X-Rays. Betatron. Nucleonic Instrumentation. Radiological Equipment. Atomic Energy Commission Instruments Branch.

Chemistry. Organic Coatings. Surface Chemistry. Organic Chemistry. Analytical Chemistry. Inorganic Chemistry. Electrodeposition. Gas Chemistry. Physical Chemistry. Thermochemistry. Spectrochemistry. Pure Substances.

Mechanics. Sound. Mechanical Instruments. Aerodynamics. Engineering Mechanics. Hydraulics. Mass. Capacity, Density, and Fluid Meters.

Organic and Fibrous Materials. Rubber. Textiles. Paper. Leather. Testing and Specifications. Polymer Structure. Organic Plastics. Dental Research.

Metallurgy. Thermal Metallurgy. Chemical Metallurgy. Mechanical Metallurgy. Corrosion.

Mineral Products. Porcelain and Pottery. Glass. Refractories. Enameled Metals. Concreting Materials. Constitution and Microstructure. Chemistry of Mineral Products.

Building Technology. Structural Engineering. Fire Protection. Heating and Air Conditioning. Floor, Roof, and Wall Coverings. Codes and Specifications.

Applied Mathematics. Numerical Analysis. Computation. Statistical Engineering. Machine Development.

Electronics. Engineering Electronics. Electron Tubes. Electronic Computers. Electronic Instrumentation.

Radio Propagation. Upper Atmosphere Research. Ionospheric Research. Regular Propagation Services. Frequency Utilization Research. Tropospheric Propagation Research. High Frequency Standards. Microwave Standards.

Ordnance Development. Electromechanical Ordnance. Ordnance Electronics. These three divisions are engaged in a broad program of research and development in advanced ordnance. Activities include basic and applied research, engineering, pilot production, field testing, and evaluation of a wide variety of ordnance matériel. Special skills and facilities of other NBS divisions also contribute to this program. The activity is sponsored by the Department of Defense.

Missile Development. Missile research and development: engineering, dynamics, intelligence, instrumentation, evaluation. Combustion in jet engines. These activities are sponsored by the Department of Defense.

- Office of Basic Instrumentation
- Office of Weights and Measures.

Part VII

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APPENDIX 1.1

1. Manufacturer's "PROCEDURE FOR TESTING BATTERY AD-X2 (Suicide Test)" Dated June 1, 1951.

June 1, 1951

PROCEDURE FOR TESTING BATTERY AD-X2 (SUICIDE TEST)

Choice of Batteries. Group 1 or 2 automotive type lead acid batteries.

1. Batteries selected should be *shelf-sulphated lead-acid batteries which have not been charged by trickle charging or any other method of charging which would effect their mechanical soundness from the time they were formed. These batteries are available through battery distributors or from war surplus; OR:

2. *Dry-charged or moist charged batteries should be selected which are beyond their date limit for putting into service which may or may not have been filled with electrolyte but which have not been charged.

3. Twenty-one Batteries as near as possible identical as to condition, age and ampere hour capacity, should be used. The batteries should be numbered for identification purposes. Odd numbers for treated batteries and even numbers for untreated batteries or vice-versa. Ten Batteries are to be treated with Battery AD-X2 and Ten Batteries are to be left untreated and one battery to be withheld for comparison purposes.

4. All batteries should be opened for inspection. If the batteries are truly sulphated, the plates will be hard. The positive plates will at times be somewhat lighter in color than normal. However, the white discoloration, so oftimes mentioned in battery parlance, need not be present to determine that a battery is sulphated. The separators should be checked to make sure that they are not dry, shrunken, or in an otherwise deteriorated condition.

5. The positive plates should be spot checked to determine the mechanical soundness as well as the amount of lead remaining in the positive grids. Batteries of the type under discussion will be found to have practically all their active material in both the positive and negative grid. Should there be more than 1/4 of an inch of mud in the bottom of any cell container, the battery is not suitable for this test.

Page 2. PROCEDURE FOR TESTING BATTERY AD-X2

To determine the soundness of the grid structure, place a nominal amount of pressure on the lower corner of the positive plate diagonally opposite from the ear connecting the plate to the bus bar. This pressure should be applied about one inch in from the edges of the plate by using the thumb and the first and second finger. At the same time, lightly twist the positive plate backward and forward to determine if there are any serious fractures in the grid structure. This should be done on two or three positive plates of each cell. Break one positive plate per cell in Battery No. 21 for grid inspection comparison.

Crosswires in the grid of the positive plate in sulphated batteries with the diameter of less than 50/1000 of an inch is insufficient to conduct enough current for charge and discharge of a positive plate. Negative plates in sulphated batteries will be found to be hard, with color ranging from dark slate gray to a very light gray. The two outside negative plates in a cell may show some shedding on initial charge in the treated batteries due to lack of support during transformation.

Where rubber separators are enountered, they may be used regardless of their dryness but, they should be slipped out from between the plates and turned end for end.

6. After determining that the elements of the batteries are sulphated by hardness of the plates and determining that the batteries are mechanically sound, they should be reassembled and filled to the proper level with electrolyte. For test purposes it is not necessary to replace the sealing compound. The electrolyte should not be allowed over 1/4 of an inch above the top of the plates where the sealing compound is not replaced as too high an electrolyte level leads to spillage and spewing from gassing and allows current to pass across the top of the cell covers during charging.

7. Treating and Charging Batteries. Open voltage as well as hydrometer and temperature readings should be taken on all Twenty batteries prior to placing on charge.

a. Do not first attempt to charge batteries to be treated and then treat, as prolonged charging on badly sulphated plates prior to treatment corrodes the positive grid. The Ten untreated batteries are the controls. For the purpose of this test which is a short term test, disregard paragraphs 15 and 24 of Form 90 other than those portions which are written into this test.

b. Place batteries on charge at 5 amps. Treat each cell of the Ten Batteries which have been properly numbered for treatment, with one envelope of Battery AD-X2 in accordance with paragraph 32 of the enclosed Form 90, immediately. Leave the other Ten Batteries Untreated. Place the Ten Treated Batteries and the Ten Untreated Batteries on separate charging currents of the same value.

c. Use separate hydrometers and separate syringes for the treated and untreated batteries.

d. Tabulate and compare the amount of water added to the treated and untreated batteries.

8. Charging and Tabulation for the first 24 hours. All batteries are to be charged at 5 amps for the first 24 hours. Take voltage, hydrometer and temperature readings at 30 minute intervals for the first 2 hours. (Temperatures should all be kept below 120°F on all batteries at all times). Then readings on voltage, hydrometer and temperature should be taken at 2 hour intervals for the remainder of the first 8 hour period of charging. Then readings on voltage, hydrometer and temperature may be omitted until the 23rd hour of charge. Between the 23rd and 24th hour, readings should be taken and recorded. At the end of the 24th hour of charge, the charging values should be stepped up to 1 amp per positive plate. Thus, on a 15 plate battery the charging current would be 7 amps. If any battery in one of the charging circuits goes above 120°F, the charging current of that circuit should be reduced and the temperature of the offending battery recorded by number. When the temperature of this battery has lowered sufficiently, return the charging current to its original value whether this be the 5 amp rate or the 1 amp per positive plate rate. The charging current should be maintained at the 1 amp per positive plate rate during the 8 hours of the working day, taking three voltage, hydrometer and temperatur readings during the 8 hour working day, at the beginning of the day, one at mid-day and one at the end of the day. The charging amperage should be dropped to 5 amps during the 16 hours in which there is no attendance at the charging line and increased to the 1 amp per positive plate during the 8 hour working day, recording the voltage, temperature and hydrometer readings during the working day as outlined above, until the batteries are fully charged. Should the specific gravity of any battery go above 1280 spg. with temperature corrections during the above outlined charging, acid should be drawn off and acceptable water added to lower

th spg. to slightly below 1280. A notation of this should be tabulated by battery number. The batteries will have been fully charged when the voltage has reached 2.5 volts per cell or better and the hydrometer reading has stopped increasing after three successive readings as outlined for readings during the working day. Also, the batteries should be gassing freely but in no case should the batteries be considered fully charged until they have received not less than 80 hours at the 5 amp rate and 40 hours at the one amp per positive plate rate. This is somewhat better than 600 percent of the ampere hour capacity of the batteries. Before taking batteries off charge, be sure that the electrolyte level is a minimum of 1/4 of an inch above the top of the plate, as the level of the electrolyte will drop depending on the amount of gas trapped in the cells, and the temperature of the electrolyte at the end of the charge. The batteries should then be taken off charge. Dry tops of batteries. The battery connectors should be disconnected and the batteries allowed to stand for 48 hours. At the end of 48 hours, voltage, hydrometer readings and temperature readings should be taken and electrolyte levels noted and included in the recording.

9. Five Batteries Treated with Battery AD-X2 and Five Untreated Batteries should be opened for inspection. If truly sulphated batteries were used in the beginning, the following results will be noted:

Treated Batteries. The paste will be found to be soft and porous and the active material in both the positive and the negative plates will be found to be in firm contact with the grids. There will be little peroxidization of the grids in the positive plates. There will be no warping or buckling of the plates and little shedding. The overall appearance of these batteries will indicate many months of useful service. Battery No. 21 may be used for comparison to establish the original condition of all batteries at this time.

Untreated Batteries. It will be noted that the positive grids are largely, if not entirely peroxided out in the positive plates and that the plates will disintegrate under pressure and twisting, as outlined in paragraph 5, page 1. The active material in the negative plates will be found to be pried loose from the grid which will cause it to be chunky and sandy. (The plates may or may not be warped.) Shedding of the active material from the plates will be considerably heavier than in the treated batteries. The condition of these batteries, if they were truly sulphated at the beginning, will show that they have little, if any, life expectancy, or they may be inert.

Page 5. PROCEDURE FOR TESTING BATTERY AD-X2

Five Battery Ad-X2 Batteries and Five Untreated Batteries should be given the following individual discharge test:

Using a discharge unit, preferrably but not necessarily a carbon pile, discharge each battery at 300 amps as long as it will discharge 300 amps--keeping track of the voltage drop and temperature at 1 minute intervals. When the battery will no longer hold a 300 amp discharge, reduce the discharge rate to 200 amps. Then record the voltage drop and temperature at 1 minute intervals, as long as the battery will hold a 200 amp. discharge rate. When it will no longer hold a 200 amp discharge rate, reduce the discharge rate to 100 amps and take voltage drop and temperature at 1 minute intervals as long as it will hold the 100 amp discharge rate. (Take care that both the treated and untreated batteries are held at the same amp rate in the successive steps and in the same room or location so that the temperatures under which they are discharged will be approximately the same). When the batteries will no longer hold a 100 amp discharge, discontinue the test. Take hydrometer readings on both the treated and untreated batteries.

This is a SUICIDE TEST and not a part of the instructions for use of Battery AD-X2. However, the Ten Treated Batteries which have been used in this test may be put into service and many months of satisfactory service may be expected from them under the most severe operating conditions.

* When batteries of the shelf-sulphated type are used, add only acceptable water to bring the electrolyte to its proper level and add only acceptable water throughout the test.

** When batteries of the dry-charged or moist-charged sulphated type are used, add acid of the specific gravity recommended by the manufacturer to fill the battery. Allow to stand for 24 hours before putting on charge. Recheck the fluid level and add sufficient acid of the same specific gravity to bring the electrolyte up to the proper level. Add acceptable water only for the remainder of the test.

PIONEERS, INC.

APPENDIX 1.2

2. Letter to Mr. Jess M. Ritchie, President, Pioneers, Inc. 2411 Grove Street, Oakland 12, California. From A. V. Astin, Acting Director, National Bureau of Standards. Dated May 23, 1952

U. S. DEPARTMENT OF COMMERCE
NATIONAL BUREAU OF STANDARDS
WASHINGTON 25

May 23, 1952

Mr. Jess M. Ritchie, President
Pioneers, Incorporated,
2411 Grove Street,
Oakland 12, California

Subject: Battery AD-X2

Dear Mr. Ritchie:

Reference is made to your letter of March 15, 1952 and to our telephone conversations concerning your product, Battery AD-X2. The Bureau is willing to conduct additional tests on your product following generally the procedure described in the so-called "Procedure for Testing Battery AD-X2 (Suicide Test)" of June 1, 1951, which you transmitted in your letter. Qualifications and conditions for this test will be as follows:

1. The Bureau has secured 21 shelf-sulfated storage batteries which will be turned over to you for mechanical inspection and repair according to the procedure outlined in paragraphs 1 to 5 inclusive of your above test procedure. These batteries consist of 6 cells connected in series-parallel to provide 6 volts. The cells in each battery should be regrouped to give two 6-volt units, thus giving a total of 42 batteries of 6 volts each.

2. After you are satisfied that the batteries are mechanically sound you will return them to the Bureau filled to the proper level and sealed.

3. The Bureau will then mark the cells and treat half of them with Battery AD-X2. The cells selected for treatment will be chosen at random according to a procedure to be named by the Bureau's statistical experts and will be charged on 2 circuits, each circuit containing an equal number of treated and untreated cells. This represents a

minor deviation in procedure suggested by you wherein odd numbered batteries are treated and even numbered batteries are untreated, or viceversa, and kept on separate circuits. The code to the treated cells will be known only to me until the tests are completed.

4. The Bureau will make no adjustment in specific gravity of the batteries by the removal of acid and addition of water during the course of the tests. This represents a minor deviation in procedure suggested by you in paragraph 3 of your test. I would like your concurrence in this deviation.

5. You will not be allowed to watch the Bureau's tests although you will be permitted to see the test set-up prior to and at the end of the tests.

6. Various experts from the Bureau staff will be asked to inspect and rate the battery plates in accordance with the first part of paragraph 9 of your test. Experts from other government laboratories will also be invited for this inspection. In addition you and one or two others you may wish to include will be allowed to inspect and rate cells according to paragraph 9 of your test, but you will not be informed as to which cells were treated prior to making your ratings. According to the claims made in your test description there should be no difficulty in distinguishing between the treated and untreated cells. After thevisual inspection we may conduct chemical tests from selected segments of the cell plates.

7. Presumably if your product does what you claim it will do, the cells treated with it will give a higher watt-hour capacity than the untreated cells. Since we will have no assurance that all the cells are of equal quality prior to starting the tests, the results will be subject to some statistical variation. Criteria for a statistically significant improvement of the battery cells due to the additive will be established by the Bureau's statistical experts.

8. If the tests do not establish definitely the usefulness of your product, I will expect you to concur that it has not been possible to demonstrate the value of your product. If the results show conclusively that your product is of value, then the Bureau's position on battery additives will have to be modified. Under no circumstances, however, shall you be permitted to use, either directly or by inference or implication, the fact of the Bureau's making these tests, the test data, or the test results for advertising, publicity or promotional purposes.

I would like your concurrence in the above test conditions. If you concur, we will turn the batteries over to you at once for inspection and repair and we will start the tests within one week after you return them to us.

Sincerely yours,

s/A. V. Astin
Acting Director

APPENDIX 1.3

3. Letter from Mr. Jess M. Ritchie, President, Pioneers, Inc. To Dr. A. V. Astin, Acting Director National Bureau of Standards, Department of Commerce, Washington 25, D. C. Dated May 26, 1952

May 26, 1952

Dr. A. V. Astin
Acting Director
National Bureau of Standards
Department of Commerce
Washington 25, D. C.

Subject: Battery AD-X2

Dear Dr. Astin:

I wish to comment in detail on the conditions you set forth in your letter of May 23, 1952, on the above subject. The numbered paragraphs in this letter refer to the similarly numbered paragraphs in your letter.

1. Acceptable.

2. Acceptable.

3. As we discussed and agreed at our meeting on May 23, 1952, care will have to be taken by the Bureau to avoid contaminating (partially treat) the untreated batteries or cells. Contamination may be avoided by using separate filler bulbs, hydrometers, and thermometers as outlined in paragraph 7-c, page 2, "Procedure for Testing Battery AD-X2, (Suicide Test) June 1, 1951."

Since twice as many 6 volt batteries are involved in the present test than were originally specified in the June 1, 1951 test, this makes it possible, as we agreed, to treat 10 - 6 volt batteries and leave 10 - 6 volt batteries untreated. Since the 6 volt batteries will be in 12 volt cases, we ask that the treated and untreated batteries be in separate cases for this portion of the test to prevent heat transfer. That is; 5 cases will contain treated batteries and 5 different cases will contain the untreated batteries. In this manner, the Suicide Test can be carried out without any variation whatsoever as to one-half of the total batteries tested while the remainder will be tested with the variations you have suggested as modified by our mutual agreement.

Of course, you will be the only one who knows which of these batteries are treated and which are untreated. This will necessitate the use of four charging circuits since you want to treat by cells and at random the remaining 20 - 6 volt batteries and use separate charging currents for charging after treatment.

4. When the cells are treated at random, it will be necessary to discharge the cells individually to arrive at their capacity. The rate of discharge should be at somewhere between 50 and 100 amps per cell since the discharge will be at 2 volts instead of 6. As we agreed at our meeting, should the specific gravity of the acid become higher than 1280, it will then be necessary to draw off acid and to add water to prevent damage to the negative plates and separators. Water should be added in accordance with paragraph 7-D, page 3, of the "Suicide Test".

5. While I appreciate your kindness in permitting me to inspect the test set-up prior to, and at the end of the tests, I believe that it would not be contrary to accepted Bureau practice for either myself or my representative to observe the test while it is in progress. Of course, I understand that I would be present at the Bureau's convenience and would interfere in no way whatsoever with the conduct of the test. In the event that I am excluded from the tests, however, it is my understanding that Dr. Keith Laidler of Catholic University, Dr. Reginald Scott Dean of the Chicago Development Company, or some other qualified and mutually acceptable person will be allowed to view the test.

6. It is my understanding that it is your intention that no one other than yourself will know which batteries or cells are treated and which are untreated until the test has been completed and the results are disclosed. It is further my understanding, that any chemical tests you may make of the cell plates after the test is completed will not be considered by the Bureau to be a part of the test in any way.

Since the Bureau is conducting the test, it should be the Bureau's responsibility to inspect and rate the battery plates as you suggest. In my judgment, it would not be proper for the Bureau to either ask for or to accept ratings of the plates by experts from other Government laboratories although inspection, as such, by any responsible, interested person should be permitted.

7. We expect that the treated cells and batteries will take a charge more rapidly at lower temperature as described in paragraph 8, page 3, of the "Suicide Test". The difference in watt hours will depend somewhat on the reaction of the untreated cells to the overcharge.

I have a detailed comment to make on the statistical analysis mentioned in the last sentence of your paragraph 7. This will be furnished in a separateletter.

8. Our experience has shown that mechanically sound sulphated batteries and cells treated with Battery AD-X2 will take a charge in less time and at lower temperatures than similar untreated units. Observed differences between the treated and untreated units similar to the differences described on page 3, paragraph 8, and page 4, paragraph 9, of the "Suicide Test" will demonstrate the value of Battery AD-X2 and the usefulness of the additive.

The Bureau has already made tests of Battery AD-X2 and has released its findings to the National Better Business Bureau, to Senators, and other prominent persons, and these findings have been made known to the public by articles in trade journals and otherwise. The Bureau's findings were adverse to the claim advanced by Pioneers Inc. for Battery AD-X2, and consequently my personal reputation, as well as that of my company, has been badly damaged. Under such circumstances, test results substantially in conformity with our past experience as described in the "Suicide Test" should cause the Bureau promptly and publicly to exercise every reasonable effort to repair this injury. Letter Circular 504 should be withdrawn immediately and public announcement of the withdrawal and the reason therefor should be made at that time by the Bureau.

I fully realize that the Bureau is not a commercial testing laboratory and I do not expect to be able to use the Bureau's tests, the test data, or the test results for advertising, publicity, or promotional purposes. However, I would like to have a copy of the Bureau's complete test record of the "Suicide Test" it conducts together with copies of the daily worksheets. My purpose in requesting these data is to complete my files on the subject. None of these data will be used in any way contrary to your expressed wishes.

Very truly yours,

PIONEERS INC.
Joss M. Richie
President

APPENDIX 2: June 1952 Test

1. Charge data
2. Discharge data
3. Recovery discharge: July 7, 1952
4. Charge and discharge data: Tests after 8 months storage
5. Tallies from inspection tests
6. Individual scores derived from tallies
7. Scores and Ranks for Each Battery on Each Characteristic as Determined by Each Judge
8. Sums of Scores and Sums of Ranks for Each Battery on Each Characteristic
9. Analysis of Direct Comparisons Between Treated and Untreated Batteries

APPENDIX 2
Table 1 Charge Data

TRAY Number 1 Treated

Battery	Cell	Time of Reading	Tempera-ture	Specific Gravity	Volts	Remarks
		3 June				
1	1	2:45 P	27.4	1.130	2.16	Started charge
	2		27.8	1.160	2.20	at 5 amp at
	3		28.0	1.140	2.21	11:00A 3 June
2	4	2:47 P	28.0	1.135	2.19	1952
	5		28.0	1.100	2.18	
	6	2:50 P	28.0	1.140	2.19	
		4 June				
1	1	8:35 A	31.0	1.215	2.36	9:45-10:45A
	2		32.1	1.265	2.38	50ml elec-
	3		32.2	1.230	2.35	trolyte taken
2	4	8:37 A	32.1	1.230	2.34	from each cell
	5		32.0	1.240	2.34	
	6	8:40 A	31.2	1.250	2.36	
		4 June				
1	1	12:20 P	37.7	1.265	2.51	Rate changed
	2		38.2	1.285	2.50	to 14 amps at
	3		38.4	1.245	2.45	11:00A 4 June
2	4	12:24 P	38.4	1.245	2.43	1952
	5		38.3	1.250	2.47	
	6	12:28 P	37.4	1.255	2.48	
		4 June				
1	1	4:31 P	44.2	1.285	2.49	
	2		46.1	1.300	2.45	
	3		46.8	1.270	2.41	
2	4	4:35 P	47.0	1.270	2.40	
	5		46.8	1.275	2.44	
	6	4:39 P	44.5	1.285	2.45	
		5 June				
1	1	8:40 A	35.3	1.310	2.54	Rate changed
	2		38.0	1.320	2.52	to 10 amps
	3		38.7	1.300	2.46	at 7:00P
2	4	8:45 A	39.1	1.300	2.46	4 June 1952
	5		39.2	1.300	2.50	
	6	8:50 A	36.4	1.315	2.51	

TRAY Number 1 (Cont'd)

Battery	Cell	Time of Reading	Temperature	Specific Gravity	Volts	Remarks
		5 June				
1	1	1:00 P	42.8	1.315	2.53	Rate changed
	2		44.1	1.330	2.51	to 1½ amps
	3		45.0	1.300	2.46	at 11:00 A
2	4	1:04 P	45.0	1.305	2.46	5 June 1952
	5		45.1	1.305	2.50	
	6	1:07 P	43.0	1.315	2.50	
		5 June				
1	1	3:40 P	45.0	1.315	2.48	Rate changed
	2		46.0	1.330	2.49	to 10 amps
	3		47.2	1.305	2.45	at 7:00P
2	4	3:43 P	47.2	1.300	2.44	5 June 1952
	5		47.0	1.305	2.48	
	6	3:45 P	45.0	1.315	2.48	
		6 June				Rate 1½amps at 11:00A 6/652 cc water 11:35A 6/6
1	1	4:35 P	45.5	1.305	2.52	106
	2		47.6	1.325	2.50	92
	3		48.0	1.310	2.46	72
2	4	4:38 P	47.8	1.305	2.45	72
	5		47.1	1.300	2.50	114
	6	4:41 P	44.1	1.315	2.50	90
		7 June				Rate 10amps at 7:00P 6/652 cc water 10:40A 6/6
1	1	8:58 A	44.1	1.310	2.50	70
	2		46.0	1.320	2.49	50
	3		46.0	1.320	2.44	45
2	4	9:01 A	45.8	1.315	2.44	65
	5		45.5	1.305	2.48	70
	6	9:03 A	43.0	1.320	2.48	70

Off charge 1205P 7 June 1952

6 June 11:00-11:30P 50ml electrolyte return to each cell and 60ml water added to all cells.

TRAY Number 2 Untreated

Battery	Cell	Time of Reading	Tempera-ture	Specific Gravity	Volts	Remarks
		3 June				
3	1	2:50 P	28.2	1.095	2.18	Started charge
	2		28.2	1.060	2.14	at 5 amps at
	3		28.1	1.065	2.17	11:00A3 June
4	4	2:53 P	28.7	1.090	2.18	1952
	5		28.2	1.125	2.18	
	6	2:55 P	28.2	1.080	2.18	
		4 June				
3	1	8:40 A	31.0	1.220	2.33	9:45-10:45A
	2		31.8	1.235	2.32	50ml elec-
	3		32.0	1.230	2.32	trolyte taken
4	4	8:43 A	32.2	1.225	2.32	from each cell
	5		32.0	1.220	2.32	
	6	8:45 A	31.1	1.215	2.34	
		4 June				
3	1	12:28 P	37.8	1.230	2.43	Rate changed
	2		38.3	1.235	2.42	to 1½ amps at
	3		38.9	1.210	2.42	11:00A 5 June
4	4	12:30 P	38.9	1.235	2.42	1952
	5		38.5	1.230	2.41	
	6	12:33 P	37.4	1.220	2.43	
		June 4				
3	1	4:40 P	44.0	1.260	2.42	
	2		46.0	1.265	2.43	
	3		46.8	1.245	2.40	
4	4	4:42 P	47.0	1.265	2.41	
	5		46.2	1.260	2.40	
	6	4:45 P	44.6	1.255	2.42	
		5 June				
3	1	8:54 A	36.2	1.300	2.48	Rate changed
	2		39.6	1.300	2.48	to 10 amps
	3		40.6	1.285	2.45	at 7:00P 4
4	4	8:56 A	40.6	1.305	2.46	June 1952
	5		40.0	1.300	2.45	
	6	8:58 A	37.7	1.290	2.48	

TRAY Number 2 (Cont'd)

Battery	Cell	Time of Reading	Temperature	Specific Gravity	Volts	Remarks
		5 June				
3	1	1:09 P	43.0	1.305	2.48	Rate changed
	2		45.1	1.305	2.48	to 14 amps
	3		46.1	1.290	2.45	at 11:00A
4	4	1:12 P	46.0	1.305	2.46	5 June 1952
	5		44.6	1.305	2.46	
	6	1:15 P	42.0	1.290	2.48	
		5 June				
3	1	3:46 P	45.0	1.305	2.46	
	2		47.5	1.300	2.46	Rate changed
	3		48.5	1.290	2.44	to 10 amps at
4	4	3:49 P	48.5	1.305	2.45	7:00P 5 June
	5		46.7	1.305	2.44	1952
	6	3:51 P	44.0	1.295	2.47	
						Rate 14amps at 11:00A 6/6/52
		6 June				cc water 11:42 6/6
3	1	4:42 P	45.0	1.300	2.48	96
	2		47.1	1.295	2.48	82
	3		48.0	1.290	2.46	81
4	4	4:44 P	47.8	1.305	2.47	89
	5		46.1	1.310	2.46	70
	6	4:46 P	43.0	1.300	2.49	89
						Rate 10amps at 7:00P 6/6/52
		7 June				cc water 10:45P 6/6
3	1	9:03 A	43.2	1.305	2.46	60
	2		45.0	1.300	2.46	80
	3		45.5	1.300	2.45	90
	4	9:05 A	45.0	1.310	2.46	90
	5		44.0	1.305	2.46	90
	6	9:07 A	41.5	1.310	2.47	75

Off charge 1205P 7 June 1952

6 June 11:00-11:30P 50ml electrolyte return to each cell and 60ml water added to all cells.

TRAY Number 3 Untreated

Battery	Cell	Time of Reading	Temperature	Specific Gravity	Volts	Remarks
		3 June				
5	1	2:55 P	28.8	1.110	2.22	Started charge at 5 amps at 11:00A 3 June 1952
	2		28.2	1.080	2.19	
	3		28.4	1.075	2.21	
6	4	2:57 P	28.8	1.070	2.21	
	5		28.9	1.105	2.24	
	6	3:00 P	28.9	1.100	2.21	
		4 June				
5	1	8:45 A	31.7	1.225	2.36	9:45-10:45A 50ml electrolyte taken from each cell
	2		32.1	1.230	2.33	
	3		32.7	1.225	2.34	
6	4	8:50 A	32.8	1.225	2.33	
	5		32.5	1.220	2.35	
	6		31.7	1.230	2.35	
		4 June				
5	1	12:38 P	38.5	1.240	2.45	Rate changed to 14 amps at 11:00 A 4 June 1952
	2		38.8	1.245	2.42	
	3		40.0	1.235	2.43	
6	4	12:41 P	40.0	1.240	2.43	
	5		39.8	1.235	2.44	
	6	12:44 P	38.5	1.240	2.44	
		4 June				
5	1	4:45 P	45.0	1.260	2.42	
	2		47.0	1.255	2.40	
	3		47.2	1.260	2.41	
6	4	4:48 P	48.0	1.255	2.40	
	5		47.9	1.260	2.41	
	6	4:50 P	45.3	1.260	2.42	
		5 June				
5	1	9:00 A	38.0	1.290	2.48	Rate changed to 10 amps at 7:00 P 4 June 1952
	2		40.8	1.300	2.46	
	3		42.0	1.290	2.46	
6	4	9:02 A	41.9	1.295	2.45	
	5		41.1	1.290	2.46	
	6	9:04 A	39.6	1.295	2.47	

TRAY Number 3 (Cont'd)

Battery	Cell	Time of Reading	Temperature	Specific Gravity	Volts	Remarks
		5 June				
5	1	1:15 P	42.8	1.295	2.48	Rate changed
	2		45.8	1.300	2.47	to 14 amps
	3		46.9	1.295	2.46	at 11:00A
6	4	1:18 P	46.8	1.295	2.46	5 June 1952
	5		46.1	1.295	2.47	
	6	1:20 P	44.0	1.300	2.47	
		5 June				
5	1	3.52 P	44.5	1.300	2.47	Rate changed
	2		47.1	1.310	2.45	to 10 amps
	3		48.5	1.300	2.45	at 7:00 P
6	4	3:55 P	49.0	1.300	2.44	5 June 1952
	5		48.2	1.300	2.45	
	6		46.1	1.300	2.46	
						Rate 14amps at 11:00A 6/6/52
		6 June				cc water 11:46 6/6
5	1	4:46 P	42.9	1.310	2.49	87
	2		46.2	1.310	2.47	75
	3		47.3	1.300	2.47	88
6	4	4:49 P	47.0	1.310	2.47	60
	5		46.0	1.310	2.48	88
	6	4:52 P	44.8	1.310	2.48	80
						Rate 10 amps at 7:00P 6/6/52
		7 June				cc water 10:50P 6/6
5	1	9:07 A	41.3	1.315	2.47	70
	2		44.0	1.320	2.46	80
	3		44.0	1.310	2.46	85
6	4	9:10 A	44.0	1.320	2.46	95
	5		42.5	1.310	2.47	60
	6	9:15 A	41.8	1.315	2.48	95

Off charge 1205P 7 June 1952

6 June 11:00-11:30P 50ml electrolyte return to each cell and 60ml water added to all cells.

TRAY Number 4 Treated

Battery	Cell	Time of Reading	Temperature	Specific Gravity	Volts	Remarks
		3 June				
7	1	3:05 P	28.5	1.105	2.18	Started charge
	2		27.8	1.070	2.14	at 5 amps at
	3		27.8	1.090	2.14	11:00A 3 June
8	4	3:07 P	27.8	1.095	2.16	1952
	5		28.0	1.110	2.18	
	6	3:10 P	28.0	1.095	2.17	
		4 June				
7	1	8:50 A	31.0	1.230	2.31	9:45-10:45A
	2		31.9	1.205	2.29	50ml elec-
	3		32.1	1.235	2.33	trolyte taken
8	4	8:53 A	32.2	1.225	2.30	from each cell
	5		32.1	1.230	2.30	
	6	8:56 A	31.2	1.220	2.32	
		4 June				
7	1	12:45 P	38.9	1.245	2.42	Rate changed
	2		39.6	1.225	2.41	to 10 amps at
	3		40.0	1.245	2.48	11:00A 4 June
8	4	12:48 P	40.0	1.235	2.42	1952
	5		39.9	1.225	2.41	
	6	12:52 P	38.8	1.230	2.43	
		4 June				
7	1	4:54 P	45.0	1.265	2.41	
	2		46.8	1.260	2.40	
	3		47.1	1.260	2.45	
8	4	4:56 P	47.0	1.260	2.41	
	5		46.0	1.265	2.40	
	6	4:58 P	48.1	1.250	2.43	
		5 June				
7	1	9:05 A	38.2	1.290	2.46	Rate changed
	2		40.2	1.290	2.46	to 10 amps at
	3		40.2	1.280	2.47	7:00 P 4 June
8	4	9:08 A	40.0	1.290	2.47	1952
	5		39.2	1.300	2.45	
	6	9:10 A	36.2	1.285	2.49	

TRAY Number 4 (Cont'd)

Battery	Cell	Time of Reading	Temperature	Specific Gravity	Volts	Remarks
		5 June				
7	1	1:21 P	43.8	1.290	2.46	Rate changed
	2		45.8	1.290	2.46	to 14 amps at
	3		46.1	1.280	2.49	11:00A 5 June
8	4	1:24 P	46.2	1.290	2.46	1952
	5		45.8	1.295	2.45	
	6	1:26 P	43.2	1.285	2.48	
		5 June				
7	1	3:57 P	46.2	1.295	2.45	Rate changed
	2		48.9	1.295	2.44	to 10 amps
	3		48.8	1.280	2.47	at 7:00P 5
8	4	3:59 P	48.8	1.290	2.45	June 1952
	5		48.6	1.300	2.44	
	6	4:01 P	45.5	1.285	2.47	
						Rate 14amps at 11:00A 6/6/52
		6 June				cc water 11:50A 6/6
7	1	4:52 P	44.5	1.305	2.48	76
	2		48.3	1.300	2.46	51
	3		48.8	1.280	2.48	120
8	4	4:54 P	48.9	1.295	2.46	84
	5		48.2	1.310	2.45	60
	6	4:55 P	44.3	1.290	2.49	76
						Rate 10amps at 7:00P 6/6/52
		7 June				cc water 10:55P 6/6
7	1	9:15 A	41.8	1.305	2.46	35
	2		44.8	1.305	2.46	95
	3		44.7	1.280	2.48	90
8	4	9:18 A	45.0	1.295	2.46	73
	5		45.0	1.305	2.45	68
	6	9:20 A	42.8	1.290	2.46	75

Off charge 1205P 7 June 1952

6 June 11:00-11:30P 50ml electrolyte return to each cell and 60ml water added to all cells.

TRAY Number 5 Untreated

Battery	Cell	Time of Reading	Tempera-ture	Specific Gravity	Volts	Remarks
		3 June				
9	1	3:10 P	28.0	1.125	2.24	Started charge
	2		28.0	1.110	2.20	at 5 amps at
	3		28.0	1.080	2.22	11:00A 3 June
10	4	3:13 P	28.0	1.130	2.20	1952
	5		29.0	1.120	2.30	
	6	3:16 P	30.0	1.115	2.24	
		4 June				
9	1	9:00 A	32.1	1.245	2.37	9:45-10:45A
	2		32.9	1.240	2.34	50ml elec-
	3		33.0	1.225	2.34	trolyte taken
10	4	9:03 A	33.3	1.235	2.36	from each cell
	5		33.0	1.220	2.35	
	6	9:06 A	31.8	1.225	2.36	
		4 June				
9	1	12:53 P	40.0	1.255	2.46	Rate changed
	2		41.3	1.255	2.43	to 14 amps at
	3		41.2	1.230	2.42	11:00A 4 June
10	4	12:56 P	41.5	1.260	2.46	1952
	5		41.2	1.235	2.44	
	6	12:59 P	40.7	1.240	2.44	
		4 June				
9	1	4:59 P	44.5	1.270	2.44	
	2		47.0	1.275	2.42	
	3		45.0	1.255	2.41	
10	4	5:02 P	47.0	1.280	2.44	
	5		45.4	1.255	2.42	
	6	5:04 P	43.7	1.260	2.44	
		5 June				
9	1	9:11 A	37.8	1.305	2.50	Rate changed
	2		39.8	1.305	2.48	to 10 amps at
	3		39.9	1.275	2.47	7:00 5 June
10	4	9:13 A	40.1	1.310	2.50	1952
	5		39.0	1.290	2.48	
	6	9:15 A	36.0	1.295	2.50	

TRAY Number 5 (Cont'd)

Battery	Cell	Time of Reading	Temperature	Specific Gravity	Volts	Remarks
		5 June				
9	1	1:27 P	44.0	1.310	2.50	Rate changed
	2		46.1	1.310	2.48	to 14 amps at
	3		46.0	1.295	2.47	11:00A 5
10	4	1:29 P	45.6	1.310	2.49	June 1952
	5		45.3	1.290	2.48	
	6	1:31 P	43.2	1.295	2.49	
		5 June				
9	1	4:02 P	45.5	1.315	2.49	Rate changed
	2		48.8	1.315	2.47	to 10 amps
	3		49.0	1.295	2.46	at 7:00P
10	4	4:05 P	49.0	1.310	2.48	5 June 1952
	5		48.0	1.295	2.46	
	6	4:08 P	46.0	1.300	2.48	
						Rate 14amps at 11:00A 6/6/52
						cc water 11:54A 6/6
		6 June				
9	1	4:56 P	45.2	1.310	2.50	109
	2		47.9	1.315	2.49	100
	3		45.5	1.300	2.50	82
10	4	4:59 P	46.5	1.310	2.51	132
	5		47.0	1.305	2.48	71
	6	5:01 P	46.2	1.300	2.48	91
						Rate 10amps at 7:00P 6/6/52
		7 June				cc water 11:00P 6/6
9	1	9:20 A	43.1	1.315	2.48	85
	2		45.9	1.320	2.47	67
	3		46.5	1.305	2.46	95
10	4	9:22 A	47.0	1.310	2.47	80
	5		46.2	1.305	2.46	75
	6	9:24 A	44.2	1.310	2.47	75

Off charge 1205P 7 June 1952

6 June 11:00-11:30P 50ml electrolyte return to each cell and 60ml water added to all cells.

TRAY Number 6 Treated

Battery	Cell	Time of Reading	Temperature	Specific Gravity	Volts	Remarks
		3 June				
11	1	3:15 P	28.3	1.080	2.16	Started charge
	2		28.1	1.060	2.14	at 5 amps at
	3		28.2	1.080	2.16	11:00A 3 June
12	4		28.4	1.100	2.17	1952
	5		28.4	1.105	2.18	
	6		28.6	1.115	2.18	
		4 June				
11	1	8:40 A	31.5	1.200	2.31	9:45-10:45A
	2		32.1	1.215	2.29	50ml elec-
	3		32.7	1.215	2.30	trolyte taken
12	4	8:43 A	33.0	1.230	2.31	from each cell
	5		32.8	1.215	2.30	
	6		32.0	1.235	2.32	
		4 June				
11	1	1:00 P	39.0	1.230	2.40	Rate changed
	2		40.0	1.230	2.39	to 14 amps at
	3		40.3	1.225	2.39	11:00A 4 June
12	4	1:04 P	40.8	1.240	2.41	1952
	5		40.4	1.235	2.39	
	6	1:07 P	39.9	1.240	2.41	
		June 4				
11	1	5:06 P	42.3	1.255	2.42	
	2		44.2	1.260	2.42	
	3		45.2	1.245	2.40	
12	4	5:10 P	45.2	1.260	2.41	
	5		45.0	1.255	2.40	
	6	5:13 P	43.4	1.260	2.42	
		5 June				
11	1	9:17 A	36.8	1.280	2.46	Rate changed
	2		39.4	1.285	2.47	to 10 amps at
	3		40.3	1.280	2.45	7:00P 4 June
12	4	9:21 A	40.6	1.290	2.45	1952
	5		40.0	1.290	2.44	
	6	9:24 A	38.0	1.295	2.47	

TRAY Number 6 (Cont'd)

Battery	Cell	Time of Reading	Temperature	Specific Gravity	Volts	Remarks
		5 June				
11	1	1:32 P	41.9	1.285	2.46	Rate changed
	2		43.8	1.285	2.47	to 14 amps at
	3		44.8	1.280	2.46	11:00A 5 June
12	4	1:36 P	44.7	1.295	2.46	1952
	5		43.2	1.285	2.46	
	6	1:40 P	42.0	1.295	2.48	
		5 June				
11	1	4:10 P	44.5	1.285	2.45	Rate changed
	2		46.7	1.285	2.46	to 10 amps at
	3		47.5	1.285	2.44	7:00P 5 June
12	4	4:12 P	48.0	1.295	2.45	1952
	5		46.4	1.290	2.45	
	6	4:14 P	44.6	1.295	2.47	
						Rate 14amps at 11:00A 6/6/52
		6 June				cc water 11:53A 6/6
11	1	5:04 P	46.6	1.290	2.45	62
	2		48.5	1.295	2.46	52
	3		49.0	1.290	2.44	79
12	4	5:07 P	49.0	1.300	2.45	65
	5		48.0	1.305	2.45	10
	6	5:10 P	44.5	1.300	2.47	62
						Rate 10amps at 7:00P 6/6/52
		7 June				cc water 11:03P 6/6
11	1	9:46 A	43.9	1.300	2.44	65
	2		46.2	1.295	2.45	55
	3		47.0	1.290	2.44	80
12	4	9:48 A	47.0	1.310	2.44	75
	5		46.2	1.310	2.44	90
	6	9:50 A	44.0	1.305	2.46	75

Off charge 1205P 7 June 1952

6 June 11:00-11:30P 50ml electrolyte return to each cell and 60ml water added to all cells.

TRAY Number 7 Treated

Battery	Cell	Time of Reading	Temperature	Specific Gravity	Volts	Remarks
		3 June				
13	1	3:22 P	29.0	1.110	2.20	Started charge
	2		28.8	1.115	2.20	at 5 amp at
	3		28.8	1.130	2.21	11:00A 3 June
14	4		28.7	1.115	2.18	1952
	5		28.7	1.115	2.18	
	6		29.0	1.125	2.20	
		4 June				
13	1	8:45 A	32.0	1.230	2.34	9:45-10:45A
	2		33.0	1.235	2.34	50ml elec-
	3		33.0	1.235	2.34	trolyte taken
14	4	8:48 A	32.8	1.235	2.31	from each cell
	5		32.5	1.225	2.33	
	6		31.4	1.235	2.36	
		4 June				
13	1	1:08 P	40.0	1.245	2.43	Rate changed
	2		41.1	1.240	2.42	to 14 amps
	3		41.2	1.250	2.42	at 11:00A
14	4	1:10 P	41.2	1.250	2.40	4 June 1952
	5		41.1	1.250	2.42	
	6	1:12 P	40.0	1.245	2.43	
		4 June				
13	1	5:13 P	43.4	1.260	2.43	
	2		45.7	1.260	2.42	
	3		47.0	1.265	2.41	
14	4	5:16 P	46.5	1.270	2.40	
	5		46.0	1.265	2.41	
	6	5:19 P	44.2	1.265	2.43	
		5 June				
13	1	9:24 A	38.2	1.295	2.47	Rate changed
	2		40.3	1.300	2.46	to 10 amps
	3		41.2	1.300	2.45	at 7:00P 4
14	4	9:28 A	41.4	1.305	2.45	June 1952
	5		40.7	1.305	2.46	
	6	9:31 A	38.2	1.305	2.47	

TRAY Number 7 (Cont'd)

Battery	Cell	Time of Reading	Temperature	Specific Gravity	Volts	Remarks
		5 June				
13	1	1:40 P	41.0	1.300	2.49	Rate changed
	2		43.8	1.305	2.47	to 14 amps at
	3		45.2	1.305	2.46	11:00A 5
14	4	1:43 P	45.8	1.310	2.46	June 1952
	5		44.1	1.310	2.47	
	6	1:45 P	41.0	1.310	2.49	
		5 June				
13	1	4:14 P	44.0	1.305	2.47	Rate changed
	2		46.3	1.305	2.46	to 10 amps at
	3		47.8	1.305	2.45	7:00P 5 June
14	4	4:17 P	48.0	1.310	2.45	1952
	5		46.7	1.310	2.45	
	6	4:19 P	43.8	1.310	2.47	
						Rate 14amps at 11:00A 6/6/52
		6 June				cc water 12:02A 6/6
13	1	5:11 P	44.0	1.305	2.47	75
	2		47.4	1.320	2.46	48
	3		49.0	1.325	2.45	65
14	4	5:15 P	49.0	1.315	2.44	61
	5		49.0	1.315	2.45	90
	6	5:18 P	46.5	1.320	2.45	71
						Rate 10amps at 7:00P 6/6
		7 June				cc water 11:05P 6/6
13	1	9:50 A	44.5	1.310	2.45	65
	2		46.0	1.320	2.44	85
	3		46.6	1.315	2.44	60
14	4	9:53 A	46.2	1.320	2.44	60
	5		46.3	1.310	2.45	50
	6	9:55 A	45.2	1.320	2.46	65

Off charge 1205P 7 June 1952

6 June 11:00-11:30P 50ml electrolyte return to each cell and 60ml water added to all cells.

TRAY Number 8 Untreated

Battery	Cell	Time of Reading	Temperature	Specific Gravity	Volts	Remarks
		3 June				
15	1	3:28 P	28.0	1.140	2.20	Started charge
	2		28.0	1.060	2.18	at 5 amps at
	3		28.0	1.100	2.20	11:00A 3 June
16	4		27.8	1.060	2.17	1952
	5		28.0	1.060	2.20	
	6		28.0	1.085	2.19	
		4 June				
15	1	8:50 A	31.6	1.245	2.39	9:45-10:45A
	2		32.3	1.215	2.32	50ml elec-
	3		32.7	1.210	2.32	trolyte taken
16	4	8:53 A	32.3	1.210	2.31	from each cell
	5		32.2	1.210	2.32	
	6		31.2	1.205	2.32	
		4 June				
15	1	1:14 P	40.0	1.250	2.46	Rate changed
	2		40.9	1.230	2.41	to 14 amps at
	3		40.9	1.225	2.41	11:00A 4 June
16	4	1:17 P	40.5	1.230	2.40	1952
	5		40.6	1.220	2.41	
	6	1:19 P	39.9	1.225	2.42	
		4 June				
15	1	5:20 P	44.0	1.270	2.44	
	2		46.5	1.255	2.41	
	3		46.5	1.245	2.40	
16	4	5:23 P	46.3	1.255	2.41	
	5		46.2	1.245	2.41	
	6	5:25 P	44.3	1.245	2.41	
		5 June				
15	1	9:31 A	36.8	1.305	2.48	Rate changed
	2		39.2	1.290	2.46	to 10 amps
	3		40.3	1.285	2.45	at 7:00P 4
16	4	9:34 A	40.0	1.285	2.45	June 1952
	5		39.8	1.275	2.45	
	6	9:37 A	37.5	1.280	2.46	

TRAY Number 8 (Cont'd)

Battery	Cell	Time of Reading	Temperature	Specific Gravity	Volts	Remarks
		5 June				
15	1	1:45 P	40.5	1.310	2.48	Rate changed
	2		44.1	1.290	2.46	to 14 amps
	3		45.0	1.285	2.46	at 11:00A
16	4	1:48 P	44.6	1.285	2.46	5 June 1952
	5		44.3	1.275	2.45	
	6	1:51 P	42.0	1.275	2.47	
		5 June				
15	1	4:20 P	44.0	1.305	2.47	Rate changed
	2		47.0	1.290	2.44	to 10 amps at
	3		48.0	1.290	2.44	7:00P 5 June
16	4	4:22 P	47.6	1.285	2.44	1952
	5		47.1	1.280	2.43	
	6	4:24 P	45.0	1.280	2.46	
						Rate 14amps at 11:00A 6/6/52
		6 June				cc water 12:00A 6/6
15	1	5:18 P	47.8	1.325	2.45	35
	2		50.0	1.300	2.43	56
	3		49.9	1.295	2.43	66
16	4	5:21 P	48.2	1.280	2.45	81
	5		48.0	1.290	2.43	46
	6	5:24 P	46.6	1.290	2.45	51
						Rate 10amps at 7:00P 6/6/52
		7 June				cc water 11:07P 6/6
15	1	9:56 A	42.0	1.325	2.46	85
	2		44.6	1.295	2.44	95
	3		45.2	1.300	2.44	90
16	4	9:58 A	45.0	1.295	2.44	80
	5		44.8	1.285	2.44	80
	6	10:00 A	43.3	1.285	2.45	75

Off charge 1205P 7 June 1952

6 June 11:00-11:30P 50ml electrolyte return to each cell and 60ml water added to all cells.

TRAY Number 9 Untreated

Battery	Cell	Time of Reading	Temperature	Specific Gravity	Volts	Remarks
		3 June				
17	1	3:33 P	28.3	1.075	2.16	Started charge
	2		28.3	1.115	2.21	at 5 amps at
	3		28.2	1.095	2.20	11:00A 3 June
18	4		28.0	1.080	2.14	1952
	5		28.0	1.060	2.14	
	6		28.2	1.075	2.18	
		4 June				
17	1	8:55 A	31.5	1.220	2.33	9:45-10:45A
	2		32.2	1.225	2.33	50ml elec-
	3		32.7	1.235	2.34	trolyte taken
18	4	8:58 A	32.2	1.205	2.33	from each cell
	5		32.0	1.215	2.32	
	6		31.8	1.220	2.32	
		4 June				
17	1	1:20 P	40.0	1.245	2.43	Rate changed
	2		41.0	1.240	2.42	to 14 amps at
	3		41.3	1.250	2.43	11:00A 4 June
18	4	1:24 P	41.5	1.240	2.45	1952
	5		41.1	1.245	2.43	
	6	1:27 P	40.0	1.240	2.42	
		4 June				
17	1	5:26 P	44.8	1.265	2.46	
	2		46.0	1.265	2.43	
	3		46.4	1.270	2.44	
18	4	5:29 P	46.1	1.255	2.47	
	5		45.5	1.270	2.46	
	6	5:32 P	43.1	1.260	2.44	
		5 June				
17	1	9:37 A	38.1	1.295	2.48	Rate changed
	2		40.0	1.295	2.46	to 10 amps
	3		41.0	1.305	2.47	at 7:00P 4
18	4	9:41 A	40.4	1.280	2.49	June 1952
	5		39.7	1.290	2.49	
	6	9:45 A	37.3	1.295	2.48	

TRAY Number 9 (Cont'd)

Battery	Cell	Time of Reading	Temperature	Specific Gravity	Volts	Remarks
		5 June				
17	1	1:51 P	43.0	1.295	2.49	Rate changed
	2		44.8	1.300	2.47	to 14 amps at
	3		45.3	1.305	2.48	11:00A 5 June
18	4	1:54 P	45.0	1.275	2.50	1952
	5		46.5	1.290	2.50	
	6	1:57 P	41.8	1.295	2.48	
		5 June				
17	1	4:25 P	45.5	1.300	2.47	Rate changed
	2		47.3	1.305	2.45	to 10 amps at
	3		48.4	1.310	2.45	7:00P 5 June
18	4	4:30 P	48.0	1.280	2.47	1952
	5		47.0	1.290	2.47	
	6	4:34 P	45.0	1.305	2.46	
						Rate 14amps at 11:00A 6/6/52
		6 June				cc water 12:09A 6/6
17	1	5:24 P	47.0	1.295	2.46	91
	2		49.0	1.300	2.45	78
	3		49.0	1.310	2.45	94
18	4	5:28 P	49.0	1.265	2.47	108
	5		48.2	1.280	2.47	105
	6	5:32 P	45.7	1.290	2.47	76
						Rate 10amps at 7:00P 6/6/52
		7 June				cc water 11:08P 6/6
17	1	10:00 A	43.3	1.300	2.47	75
	2		44.8	1.310	2.47	70
	3		45.8	1.310	2.47	65
18	4	10:04 A	45.3	1.280	2.48	75
	5		44.4	1.285	2.49	75
	6	10:07 A	42.5	1.300	2.48	65

Off charge 1205P 7 June 1952

6 June 11:00-11:30P 50ml electrolyte return to each cell and 60ml water added to all cells.

TRAY Number 10 Treated

Battery	Cell	Time of Reading	Temperature	Specific Gravity	Volts	Remarks
		3 June				
19	1	3:40 P	28.0	1.105	2.17	Started charge
	2		28.4	1.120	2.24	at 5 amps at
	3		28.2	1.115	2.22	11:00A 3 June
20	4	3:43 P	28.3	1.105	2.19	1952
	5		28.5	1.120	2.20	
	6	3:45 P	28.5	1.105	2.19	
		4 June				
19	1	9:00 A	32.0	1.225	2.32	9:45-10:45A
	2		32.8	1.235	2.38	50ml elec-
	3		33.0	1.225	2.33	trolyte taken
20	4	9:03 A	32.9	1.225	2.35	from each cell
	5		32.8	1.215	2.32	
	6		32.0	1.215	2.32	
		4 June				
19	1	1:28 P	40.6	1.240	2.42	Rate changed
	2		41.9	1.240	2.44	to 14 amps at
	3		42.0	1.230	2.40	11:00A 4 June
20	4	1:32 P	42.0	1.245	2.43	1952
	5		41.8	1.240	2.41	
	6	1:36 P	40.0	1.240	2.41	
		4 June				
19	1	5:33 P	43.5	1.270	2.44	
	2		44.8	1.265	2.42	
	3		44.7	1.265	2.42	
20	4	5:36 P	44.7	1.265	2.42	
	5		44.0	1.265	2.42	
	6	5:39 P	40.6	1.265	2.43	
		5 June				
19	1	9:45 A	37.0	1.295	2.47	Rate changed
	2		38.3	1.300	2.45	to 10 amps at
	3		38.8	1.300	2.45	7:00P 4 June
20	4	9:49 A	38.3	1.300	2.46	1952
	5		37.9	1.295	2.46	
	6	9:52 A	35.6	1.290	2.46	

TRAY Number 10 (Cont'd)

Battery	Cell	Time of Reading	Temperature	Specific Gravity	Volts	Remarks
		5 June				
19	1	1:57 P	41.3	1.305	2.48	Rate changed
	2		43.1	1.295	2.47	to 14 amps at
	3		43.8	1.295	2.46	11:00A 5 June
20	4	2:01 P	43.2	1.300	2.46	1952
	5		43.0	1.295	2.46	
	6	2:05 P	39.9	1.295	2.48	
		5 June				
19	1	4:35 P	44.3	1.300	2.46	Rate changed
	2		45.0	1.305	2.45	to 10 amps at
	3		46.0	1.300	2.44	7:00P 5 June
20	4	4:38 P	45.6	1.305	2.45	1952
	5		45.0	1.305	2.45	
	6	4:41 P	42.0	1.295	2.47	
						Rate 14amps at 11:00A 6/6/52
		6 June				cc water 12:13A 6/6
19	1	5:33 P	45.3	1.290	2.47	96
	2		47.0	1.330	2.45	21
	3		48.0	1.310	2.43	51
20	4	5:36 P	47.8	1.305	2.44	30
	5		47.0	1.305	2.44	56
	6	5:39 P	44.0	1.305	2.45	26
						Rate 10amps at 7:00P 6/6/52
		7 June				cc water 11:10P 6/6
19	1	10:07 A	42.0	1.295	2.47	60
	2		44.0	1.330	2.45	80
	3		45.0	1.305	2.44	75
20	4	10:10 A	45.0	1.315	2.44	70
	5		44.8	1.310	2.44	65
	6	10:12 A	42.8	1.305	2.45	85

Off charge 1205P 7 June 1952

6 June 11:00-11:30P 50ml electrolyte return to each cell and 60ml water added to all cells.

TRAY Number 11 Treated 21, Untreated 22

Battery	Cell	Time of Reading	Temperature	Specific Gravity	Volts	Remarks
		3 June				
21	1	3:45 P	28.0	1.130	2.18	Started charge
	2		28.0	1.110	2.20	at 5 amps at
	3		28.0	1.120	2.20	11:00A 3 June
22	4	3:48 P	28.0	1.065	2.18	1952
	5		28.0	1.080	2.18	
	6	3:50 P	28.0	1.075	2.20	
		4 June				
21	1	9:05 A	31.1	1.245	2.37	9:45-10:45A
	2		32.1	1.225	2.32	50ml elec-
	3		32.5	1.230	2.33	trolyte taken
22	4	9:07 A	32.1	1.205	2.32	from each cell
	5		32.0	1.220	2.32	
	6		31.0	1.200	2.33	
		4 June				
21	1	1:38 P	42.2	1.260	2.46	Rate changed
	2		43.1	1.240	2.41	to 14 amps at
	3		43.1	1.250	2.41	11:00A 4 June
22	4	1:44 P	43.0	1.225	2.40	1952
	5		42.4	1.240	2.41	
	6	1:47 P	41.0	1.225	2.41	
						Cadmium
		4 June				pos. neg.
21	1	5:43 P	46.0	1.275	2.45	2.39 -.08
	2		47.9	1.265	2.41	2.38 -.03
	3		48.5	1.265	2.41	2.37 -.04
22	4	5:47 P	47.8	1.250	2.40	2.36 -.04
	5		46.8	1.265	2.42	2.38 -.04
	6	5:50 P	44.0	1.250	2.42	2.39 -.04
						Rate 10amps at 7:00P 6/4/52
		5 June				Cadmium pos. neg.
21	1	9:52 A	37.0	1.300	2.50	2.43 -.07
	2		39.8	1.290	2.47	2.42 -.05
	3		39.6	1.295	2.46	2.42 -.04
22	4	9:56 A	39.2	1.285	2.45	2.42 -.04
	5		38.1	1.295	2.48	2.43 -.04
	6	10:00 A	36.0	1.275	2.47	2.43 -.05

TRAY Number 11 (Cont'd)

Battery	Cell	Time of Reading	Temperature	Specific Gravity	Volts	Remarks
		5 June				
21	1	2:07 P	42.0	1.300	2.50	Rate changed
	2		45.5	1.290	2.46	to 14 amps at
	3		46.0	1.295	2.46	11:00A 5 June
22	4	2:10 P	46.0	1.280	2.44	1952
	5		45.0	1.295	2.47	
	6	2:13 P	42.0	1.285	2.47	
		5 June				
21	1	4:44 P	44.9	1.300	2.48	Rate changed
	2		48.0	1.295	2.44	to 10 amps at
	3		49.0	1.300	2.44	7:00P 5 June
22	4	4:47 P	49.0	1.285	2.43	1952
	5		47.2	1.295	2.45	
	6	4:49 P	44.5	1.285	2.45	
				Rate 14amps at 11:00A 6/6/52		

Battery	Cell	6 June				Cadmium pos.	Cadmium neg.	H_2O*
21	1	8:30 A	34.5	1.320	2.53	2.44	-.09	125
	2		36.1	1.320	2.49	2.44	-.06	120
	3		36.5	1.320	2.49	2.43	-.06	125
22	4	8:35 A	36.5	1.325	2.47	2.42	-.06	125
	5		37.0	1.315	2.49	2.44	-.06	125
	6	8:39 A	34.8	1.305	2.49	2.44	-.05	120
				Rate 10amps at 7:00P 6/6/52				

Battery	Cell	6 June				Cadmium pos.	Cadmium neg.
21	1	3:28 P	40.0	1.285	2.48	2.42	-.07
	2		43.0	1.285	2.44	2.41	-.04
	3		43.8	1.290	2.44	2.41	-.04
22	4	3:32 P	44.0	1.275	2.42	2.40	-.03
	5		43.5	1.285	2.44	2.41	-.03
	6	3:35 P	41.5	1.275	2.44	2.41	-.03

Battery	Cell	7 June				Cadmium pos.	Cadmium neg.
21	1	8:45 A	42.8	1.285	2.47	2.42	-.05
	2		44.8	1.290	2.44	2.42	-.03
	3		45.0	1.295	2.44	2.42	-.02
22	4	8:50 A	44.5	1.280	2.43	2.41	-.02
	5		43.0	1.295	2.45	2.42+	-.03
	6	8:55 A	41.0	1.280	2.45	2.43	-.03

Off Charge 10:15A 7 June 1952

6 June 9-10:00A 50ml electrolyte and 55ml water added to all cells.
* 10:20A 6 June 1952

TRAY Number 12 Treated 23, Untreated 24

Battery	Cell	Time of Reading	Temperature	Specific Gravity	Volts	Remarks
		3 June				
23	1	3:53 P	27.5	1.105	2.19	Started charge
	2		27.0	1.125	2.19	at 5 amps at
	3		27.5	1.135	2.17	11:00A 3 June
24	4	3:57 P	27.8	1.090	2.17	1952
	5		27.4	1.105	2.17	
	6	4:00 P	28.0	1.115	2.20	
		4 June				
23	1	9:10 A	30.9	1.245	2.35	9:45-10:45A
	2		32.0	1.255	2.36	50ml elec-
	3		32.1	1.255	2.36	trolyte taken
24	4	9:12 A	32.2	1.240	2.34	from each cell
	5		32.1	1.240	2.35	
	6		31.3	1.245	2.36	
		4 June				
23	1	1:50 P	41.4	1.270	2.44	Rate changed
	2		43.0	1.270	2.45	to 1½ amps at
	3		43.2	1.265	2.46	11:00A 4 June
24	4	1:55 P	43.6	1.255	2.45	1952
	5		43.3	1.260	2.45	
	6	1:59 P	42.2	1.260	2.46	

Battery	Cell	Time of Reading	Temperature	Specific Gravity	Volts	Cadmium pos.	Cadmium neg.
		4 June					
23	1	5:50 P	44.0	1.290	2.46	2.38	-.06
	2		47.0	1.290	2.45	2.39	-.06
	3		48.0	1.275	2.45	2.39	-.07
24	4	5:53 P	48.2	1.270	2.45	2.38	-.07
	5		48.2	1.275	2.45	2.38	-.07
	6	5:55 P	46.1	1.270	2.46	2.39	-.07

Rate 10amps at 7:00P 6/4/52

Battery	Cell	Time of Reading	Temperature	Specific Gravity	Volts	Cadmium pos.	Cadmium neg.
		5 June					
23	1	10:00 A	36.2	1.315	2.50	2.44	-.07
	2		39.4	1.315	2.50	2.44	-.06
	3		40.0	1.305	2.50	2.43	-.07
24	4	10:03 A	40.4	1.295	2.49	2.43	-.07
	5		40.2	1.295	2.49	2.43	-.07
	6	10:06 A	38.0	1.300	2.50	2.44	-.07

TRAY Number 12 (Cont'd)

Battery	Cell	Time of Reading	Temperature	Specific Gravity	Volts	Remarks
		5 June				
23	1	2:14 P	43.0	1.315	2.49	Rate changed
	2		46.0	1.315	2.49	to 14 amps at
	3		46.0	1.305	2.49	11:00A 5 June
24	4	2:17 P	47.1	1.295	2.48	1952
	5		46.0	1.295	2.48	
	6	2:20 P	44.0	1.305	2.50	
		5 June				
23	1	4:50 P	45.5	1.315	2.48	Rate changed
	2		48.0	1.315	2.47	to 10 amps at
	3		49.0	1.305	2.47	7:00P 5 June
24	4	4:52 P	49.0	1.300	2.46	1952
	5		48.1	1.295	2.47	
	6	4:54 P	45.9	1.305	2.48	

Rate 14amps at 11:00A 6/6/52

Battery	Cell					Cadmium pos.	Cadmium neg.	H_2O*
		6 June						
23	1	8:39 A	34.8	1.330	2.52	2.45	-.08	125
	2		37.3	1.335	2.51	2.45	-.07	125
	3		37.8	1.325	2.51	2.44	-.08	140
24	4	8:42 A	37.4	1.320	2.51	2.43	-.08	155
	5		37.0	------	2.51	2.44	-.08	160
	6	8:46 A	35.1	1.320	2.52	2.45	-.07	140

Rate 10amps at 7:00P 6/6/52

Battery	Cell					Cadmium pos.	Cadmium neg.
		6 June					
23	1	3:35 P	41.0	1.300	2.48	2.42+	-.05
	2		44.0	1.300	2.47	2.42	-.05
	3		45.0	1.280	2.47	2.42-	-.06
24	4	3:38 P	45.3	1.285	2.46	2.41	-.05
	5		45.0	1.280	2.46	2.42-	-.05
	6	3:40 P	43.0	1.285	2.47	2.43	-.05
		7 June					
23	1	8:55 A	41.2	1.310	2.48	2.43	-.05
	2		43.5	1.310	2.47	2.44	-.04
	3		44.0	1.300	2.48	2.44	-.05
24	4	9:00 A	44.0	1.290	2.48	2.43	-.05
	5		43.5	1.290	2.48	2.43	-.06
	6	9:04 A	41.2	1.295	2.49	2.44	-.05

Off Charge 10:15A 7 June 1952

6 June 9-10:00A 50ml electrolyte and 55ml water added to all cells.
* 10:28A 6 June 1952

TRAY Number 13 Untreated 25, Treated 26

Battery	Cell	Time of Reading	Temperature	Specific Gravity	Volts	Remarks
		3 June				
25	1	4:00 P	28.0	1.120	2.19	Started charge
	2		28.0	1.115	2.22	at 5 amps at
	3		28.2	1.140	2.22	11:00A 3 June
26	4	4:04 P	28.5	1.140	2.23	1952
	5		28.5	1.170	2.26	
	6	4:08 P	28.6	1.150	2.24	
		4 June				
25	1	9:20 A	31.2	1.250	2.37	9:45-10:45A
	2		32.8	1.240	2.35	50ml elec-
	3		32.7	1.230	2.35	trolyte taken
26	4	9:22 A	33.2	1.250	2.37	from each cell
	5		32.2	1.250	2.36	
	6		31.4	1.240	2.36	
		4 June				
25	1	2:00 P	41.8	1.265	2.47	Rate changed
	2		43.2	1.260	2.43	to 14 amps at
	3		43.5	1.250	2.42	11:00A 4 June
26	4	2:03 P	43.9	1.260	2.46	1952
	5		43.8	1.260	2.44	
	6	2:05 P	41.0	1.250	2.45	
						Cadmium
		4 June				pos. neg.
25	1	5:58 P	45.0	1.280	2.46	2.40 -.08
	2		47.0	1.270	2.42	2.38 -.05
	3		47.5	1.270	2.42	2.38 -.04
26	4	6:01 P	48.0	1.275	2.44	2.38 -.06
	5		47.9	1.275	2.42	2.38 -.04
	6	6:03 P	45.0	1.265	2.44	2.39 -.06
						Rate 10amps at 7:00P 6/4/52
		5 June				Cadmium
						pos. neg.
25	1	10:07 A	37.3	1.305	2.51	2.44 .07
	2		40.0	1.305	2.48	2.43 -.05
	3		41.0	1.300	2.47	2.43 -.04
26	4	10:09 A	41.5	1.310	2.49	2.43 -.06
	5		41.2	1.305	2.48	2.43 -.05
	6	10:11 A	38.4	1.290	2.49	2.43 -.06

TRAY Number 13 (Cont'd)

Battery	Cell	Time of Reading	Temperature	Specific Gravity	Volts	Remarks
		5 June				
25	1	2:20 P	43.0	1.310	2.50	Rate changed
	2		45.8	1.310	2.48	to 14 amps at
	3		46.0	1.310	2.47	11:00A 5 June
26	4	2:24 P	46.2	1.315	2.49	1952
	5		45.2	1.315	2.48	
	6	2:27 P	42.0	1.290	2.50	
		5 June				
25	1	4:55 P	45.0	1.310	2.49	Rate changed
	2		48.0	1.305	2.47	to 10 amps at
	3		49.0	1.310	2.46	7:00P 5 June
26	4	4:57 P	48.8	1.315	2.47	1952
	5		47.7	1.315	2.47	
	6	4:58 P	43.8	1.305	2.49	
				Rate 14amps at 11:00A 6/6/52		

Battery	Cell	Time of Reading	Temperature	Specific Gravity	Volts	Cadmium pos.	Cadmium neg.	H_2O*
		6 June						
25	1	8:46 A	35.2	1.325	2.52	2.45	-.08	140
	2		37.5	1.330	2.51	2.45	-.07	110
	3		35.8	-----	2.49	2.43	-.06	165
26	4	8:48 A	38.6	1.330	2.50	2.44	-.07	120
	5		38.0	1.335	2.50	2.44	-.06	165
	6	8:50 A	36.9	1.315	2.50	2.44	-.07	105
				Rate 10amps at 7:00P 6/6/52				

Battery	Cell	Time of Reading	Temperature	Specific Gravity	Volts	Cadmium pos.	Cadmium neg.
		6 June					
25	1	3:40 P	42.0	1.300	2.48	2.43	-.05
	2		44.0	1.305	2.46	2.43	-.03
	3		44.0	1.300	2.45	2.44	-.02-
26	4	3:44 P	45.0	1.310	2.47	2.44	-.03
	5		44.6	1.300	2.46	2.43	-.03
	6	3:48 P	42.3	1.300	2.47	2.43	-.04
		7 June					
25	1	9:04 A	40.0	1.305	2.50	2.44	-.06
	2		41.5	1.305	2.49	2.45	-.05
	3		42.1	1.300	2.48	2.45	-.04
26	4	9:07 A	42.4	1.315	2.49	2.45	-.05
	5		42.0	1.310	2.49	2.45	-.04
	6	9:10 A	39.7	1.300	2.50	2.45	-.04

Off Charge 10:15A 7 June 1952

6 June 9-10:00A 50ml electrolyte and 55ml water added to all cells.
*10:31A 6 June 1952

TRAY Number 14 Treated 27, Untreated 28

Battery	Cell	Time of Reading	Temperature	Specific Gravity	Volts	Remarks
		3 June				
27	1	4:08 P	28.2	1.130	2.17	Started charge
	2		28.2	1.130	2.20	at 5 amps at
	3		28.0	1.105	2.18	11:00A 3 June
28	4	4:12 P	28.2	1.080	2.17	1952
	5		28.2	1.075	2.16	
	6	4:15 P	28.2	1.065	2.16	
		4 June				
27	1	9:23 A	31.3	1.230	2.31	9:45-10:45A
	2		32.1	1.240	2.32	50ml elec-
	3		32.3	1.225	2.31	trolyte taken
28	4	9:25 A	32.3	1.215	2.32	from each cell
	5		32.0	1.215	2.31	
	6		31.3	1.200	2.31	
		4 June				
27	1	2:12 P	41.3	1.235	2.40	Rate changed
	2		43.0	1.260	2.40	to 14 amps
	3		43.1	1.250	2.41	at 11:00A 4
28	4	2:16 P	43.2	1.245	2.41	June 1952
	5		42.8	1.240	2.40	
	6	2:19 P	41.6	1.225	2.39	

Battery	Cell	4 June				Cadmium pos.	Cadmium neg.
27	1	6:04 P	46.0	1.260	2.40	2.38	-.04
	2		47.3	1.275	2.40	2.39	-.02
	3		48.0	1.265	2.41	2.39	-.03
28	4	6:07 P	48.2	1.265	2.42	2.38	-.05
	5		47.6	1.260	2.41	2.38	-.04
	6	6:10 P	45.2	1.250	2.40	2.38	-.02

Rate 10amps at 7:00P 6/4/52

Battery	Cell	5 June				Cadmium pos.	Cadmium neg.
27	1	10:12 A	40.0	1.280	2.46	2.42	-.04
	2		41.7	1.310	2.46	2.43	-.03
	3		42.1	1.290	2.46	2.43	-.03
28	4	10:16 A	41.9	1.280	2.47	2.43	-.03
	5		41.2	1.290	2.47	2.43	-.03+
	6	10:19 A	39.1	1.280	2.46	2.44-	-.02+

TRAY Number 14 (Cont'd)

Battery	Cell	Time of Reading	Temperature	Specific Gravity	Volts	Remarks
		5 June				
27	1	2:30 P	43.0	1.290	2.48	Rate changed
	2		45.8	1.310	2.47	to 14 amps at
	3		46.3	1.300	2.46	11:00A 5 June
28	4	2:33 P	47.2	1.290	2.47	1952
	5		46.9	1.290	2.47	
	6	2:35 P	44.0	1.280	2.47	
		5 June				
27	1	4:59 P	46.0	1.295	2.46	Rate changed
	2		47.8	1.305	2.46	to 10 amps at
	3		49.0	1.300	2.46	7:00P 5 June
28	4	5:02 P	49.5	1.295	2.46	1952
	5		49.0	1.295	2.46	
	6	5:05 P	46.0	1.285	2.45	

Rate 14amps at 11:00A 6/6/52

						Cadmium pos.	Cadmium neg.	H_2O*
		6 June						
27	1	8:50 A	39.1	1.305	2.48	2.43	-.06	85
	2		39.8	1.330	2.48	2.43	-.06	90
	3		39.6	1.315	2.48	2.43	-.06	115
28	4	8:53 A	37.0	----	2.49	2.43	-.07	160
	5		37.5	1.315	2.50	2.44	-.07	125
	6	8:55 A	36.0	1.305	2.50	2.44	-.06	130

Rate 10amps at 7:00P 6/6/52

						Cadmium pos.	Cadmium neg.
		6 June					
27	1	3:48 P	43.4	1.275	2.45	2.41	-.03
	2		44.5	1.300	2.45	2.42	-.03
	3		45.0	1.285	2.45	2.42	-.03
28	4	3:52 P	44.6	1.285	2.46	2.42	-.05
	5		43.0	1.285	2.46	2.42	-.05
	6	3:55 P	41.8	1.285	2.46	2.43	-.03

						Cadmium pos.	Cadmium neg.
		7 June					
27	1	9:10 A	42.0	1.280	2.47	2.43	-.04
	2		42.8	1.310	2.47	2.44+	-.03
	3		43.1	1.290	2.47	2.44	-.03
28	4	9:14 A	43.4	1.285	2.48-	2.44	-.04
	5		43.0	1.285	2.48-	2.43	-.04
	6	9:18 A	41.3	1.285	2.47	2.44	-.03

Off Charge 10:15A 7 June 1952

6 June 9-10:00A 50ml electrolyte and 55ml water added to all cells.

* 10:37A 6 June 1952

TRAY Number 15 Untreated 29, Treated 30

Battery	Cell	Time of Reading	Temperature	Specific Gravity	Volts	Remarks
		3 June				
29	1	4:15 P	28.0	1.075	2.16	Started charge
	2		27.7	1.100	2.17	at 5 amps at
	3		27.4	1.065	2.16	11:00A 3 June
30	4	4:17 P	27.8	1.100	2.16	1952
	5		27.7	1.105	2.17	
	6	4:18 P	27.3	1.095	2.16	
		4 June				
29	1	9:27 A	31.5	1.230	2.36	9:45-10:45A
	2		32.0	1.240	2.36	50ml elec-
	3		32.2	1.225	2.35	trolyte taken
30	4	9:29 A	32.5	1.255	2.36	from each cell
	5		32.0	1.260	2.34	
	6		31.0	1.235	2.35	
		4 June				
29	1	2:20 P	43.4	1.250	2.45	Rate changed
	2		44.7	1.255	2.44	to 14 amps
	3		45.0	1.245	2.46	at 11:00A 4
30	4	2:23 P	45.0	1.275	2.46	June 1952
	5		44.1	1.275	2.43	
	6	2:25 P	42.6	1.260	2.46	

						Cadmium pos.	Cadmium neg.
		4 June					
29	1	6:10 P	47.5	1.265	2.46	2.38	-.06
	2		49.0	1.275	2.45	2.39	-.06
	3		49.0	1.255	2.46	2.38	-.08
30	4	6:14 P	48.6	1.285	2.46	2.38	-.08
	5		47.8	1.290	2.45	2.38	-.06
	6	6:18 P	45.4	1.275	2.47	2.40	-.07

Rate 10amps at 7:00P 6/4/52

						Cadmium pos.	Cadmium neg.
		5 June					
29	1	10:20 A	39.0	1.290	2.50	2.44	-.06
	2		41.0	1.300	2.49	2.44	-.05
	3		40.8	1.275	2.50	2.43	-.07
30	4	10:23 A	40.6	1.305	2.50	2.44	-.06
	5		39.4	1.310	2.49	2.44	-.05
	6	10:26 A	37.1	1.300	2.51	2.45	-.06+

TRAY Number 15 (Cont'd)

Battery	Cell	Time of Reading	Temperature	Specific Gravity	Volts	Remarks
		5 June				
29	1	2:35 P	44.8	1.290	2.50	Rate changed
	2		47.0	1.300	2.48	to 14 amps at
	3		47.0	1.275	2.49	11:00A 5 June
30	4	2:39 P	47.0	1.305	2.48	1952
	5		46.8	1.310	2.47	
	6	2:42 P	44.0	1.300	2.49	
		5 June				
29	1	5:06 P	47.0	1.300	2.48	Rate changed
	2		48.7	1.305	2.47	to 10 amps at
	3		49.0	1.275	2.47	7:00P 5 June
30	4	5:09 P	48.8	1.310	2.48	1952
	5		48.0	1.315	2.47	
	6	5:12 P	45.0	1.300	2.49	
				Rate 14amps at 11:00A 6/6/52		

Battery	Cell					Cadmium pos.	Cadmium neg.	H_2O*
		6 June						
29	1	8:55 A	34.2	-----	2.51	2.43	-.09	150
	2		35.0	1.320	2.51	2.44	-.08	145
	3		35.7	-----	2.51	2.43	-.09	150
30	4	8:57 A	36.0	-----	2.51	2.43	-.09	145
	5		36.7	1.330	2.51	2.44	-.07	100
	6	9:00 A	34.5	1.315	2.53	2.45	-.09	130
				Rate 10amps at 7:00P 6/6/52				

Battery	Cell					Cadmium pos.	Cadmium neg.
		6 June					
29	1	3:55 P	42.5	1.280	2.48	2.42	-.07
	2		44.0	1.280	2.47	2.42+	-.05
	3		44.0	1.265	2.48	2.41	-.07
30	4	4:00 P	43.8	1.290	2.48	2.42	-.06
	5		42.8	1.305	2.48	2.43	-.05
	6	4:04 P	40.4	1.285	2.49	2.43	-.06

Battery	Cell					Cadmium pos.	Cadmium neg.
		7 June					
29	1	9:18 A	42.8	1.285	2.48	2.44	-.05
	2		42.0	1.295	2.47	2.44	-.04
	3		44.8	1.265	2.48	2.43	-.05
30	4	9:22 A	44.8	1.295	2.47	2.44	-.04
	5		44.0	1.305	2.47	2.44	-.03
	6	9:25 A	44.0	1.285	2.48	2.44	-.04

Off Charge 10:15A 7 June 1952

6 June 9-10:00A 50ml electrolyte and 55ml water added to all cells.

* 10:40A 6 June 1952

TRAY Number 16 Untreated 31, Treated 32

Battery	Cell	Time of Reading	Temperature	Specific Gravity	Volts	Remarks
		3 June				
31	1	4:18 P	29.0	1.130	2.20	Started charge
	2		29.0	1.130	2.31	at 5 amps at
	3		28.7	1.125	2.23	11:00A 3 June
32	4	4:20 P	28.3	1.110	2.20	1952.
	5		28.3	1.125	2.17	
	6	4:22 P	28.3	1.140	2.23	
		4 June				
31	1	9:30 A	31.1	1.240	2.35	9:45-10:45 A
	2		32.0	1.215	2.35	50ml electro-
	3		32.0	1.235	2.36	lyte taken fro
32	4	9:32 A	31.5	1.225	2.34	each cell.
	5		30.8	1.245	2.33	
	6		30.0	1.240	2.38	
		4 June				
31	1	2:26 P	42.4	1.255	2.42	Rate changed t
	2		43.5	1.230	2.41	14 amps at
	3		43.9	1.245	2.42	11:00A 4 June
32	4	2:30 P	43.8	1.235	2.41	1952.
	5		43.0	1.270	2.41	
	6	2:33 P	42.0	1.255	2.44	

Battery	Cell	4 June				Cadmium pos.	Cadmium neg.
31	1	6:18 P	45.0	1.265	2.43	2.39	-.04
	2		47.3	1.245	2.40	2.38	-.03
	3		48.2	1.265	2.42	2.38	-.04
32	4	6:21 P	47.7	1.255	2.40	2.38	-.04
	5		47.0	1.285	2.41	2.38	-.04
	6	6:23 P	44.7	1.270	2.44	2.39	-.06

Rate 10amps at 7:00P 6/4/52

Battery	Cell	5 June				Cadmium pos.	Cadmium neg.
31	1	10:26 A	36.9	1.300	2.48	2.45	-.02+
	2		39.0	1.280	2.46	2.43	-.03
	3		39.5	1.290	2.47	2.44	-.03
32	4	10:31 A	39.2	1.285	2.45	2.43	-.03
	5		38.2	1.310	2.47	2.44	-.02
	6	10:35 A	36.1	1.295	2.49	2.45	-.04

TRAY Number 16 (Cont'd)

Battery	Cell	Time of Reading	Temperature	Specific Gravity	Volts	Remarks
		5 June				
31	1	2:42 P	42.7	1.300	2.46	Rate changed to
	2		45.0	1.280	2.45	14 amps at 11:00
	3		45.6	1.300	2.46	5 June 1952.
32	4	2:46 P	45.5	1.285	2.45	
	5		45.0	1.315	2.46	
	6	2:50 P	43.0	1.295	2.48	
		5 June				
31	1	5:12 P	44.2	1.300	2.47	Rate changed to
	2		47.1	1.285	2.45	10 amps at 7:00P
	3		48.0	1.305	2.45	5 June 1952.
32	4	5:16 P	48.0	1.290	2.44	
	5		47.0	1.320	2.45	
	6	5:19 P	45.0	1.300	2.46	

Rate 14amps at 11:00A 6/6/52

						Cadmium		
		6 June				pos.	neg.	H_2O
31	1	9:00 A	34.8	1.325	2.51	2.46	-.05	110
	2		36.4	1.305	2.49	2.44	-.06	110
	3		36.3	1.325	2.50	2.45	-.05	115
32	4	9:02 A	37.8	1.310	2.48	2.43	-.05	110
	5		37.0	1.340	2.49	2.45	-.04	100
	6	9:04 A	35.8	1.320	2.51	2.46	-.05	120

Rate 10amps at 7:00P 6/6/52

						Cadmium	
		6 June				pos.	neg.
31	1	4:04 P	40.4	1.300	2.46	2.44	-.03
	2		42.0	1.285	2.45	2.42	-.03
	3		42.6	1.295	2.46	2.43	-.03
32	4	4:08 P	43.0	1.285	2.44	2.41	-.03
	5		42.9	1.310	2.45	2.43	-.03
	6	4:12 P	41.0	1.295	2.46	2.43	-.03

						Cadmium	
		7 June				pos.	neg.
31	1	9:26 A	42.0	1.305	2.46	2.45	-.01
	2		44.0	1.290	2.45	2.44	-.02
	3		44.7	1.300	2.46	2.44	-.01
32	4	9:30 A	44.5	1.290	2.44	2.43	-.01
	5		44.0	1.315	2.46-	2.44	-.01
	6	9:34 A	42.0	1.295	2.46+	2.44	-.02

Off Charge 10:15A 7 June 1952

6 June: 9-10:00A 50ml electrolyte and 55ml water added to all cells.

*10:45A 6 June 1952.

APPENDIX 2

Table 2 - Discharge data

Treated Battery 1 Tray 1
10 June 1952

Discharge rate 300 amp		Discharge rate 200 amp		Discharge rate 100 amp	
OCV 6.32v					
Min.	Volts	Min.	Volts	Min.	Volts
0	Start	5 10/60	Start	7 40/60	Start
5/60	4.72	5 17/60	3.95	7 45/60	4.44
1/2	4.54	5 1/2	3.97	8	4.53
1	4.43	6	3.89	8 1/2	4.57
1 1/2	4.39	6 1/2	3.73	9	4.55
2	4.17	7	3.51	9 1/2	4.43
2 1/2	4.06	7 1/2	3.11	10	4.37
3	3.92	7 40/60	3.00	10 1/2	4.26
3 1/2	3.78			11	4.12
4	3.60			11 1/2	4.01
4 1/2	3.39			12	3.78
5	3.11			12 1/2	3.64
5 10/60	3.00			13	3.53
				13 1/2	3.36
				14	3.19
				14 1/2	3.10
				15	3.00
				15 1/2	2.88
				16	2.73
				16 1/2	2.57
				17	2.42
				17 1/2	2.22
				18	2.01
				18 1/2	1.82
				19	1.64
				19 1/2	1.30
				20	.92
				20 1/2	.60
Watt hrs. 102.794		30.356		65.526	

APPENDIX 2
Table 2 - (Sheet 2)

Treated Battery 2 Tray 1
10 June 1952

Discharge rate 300 amp		Discharge rate 200 amp		Discharge rate 100 amp	
OCV 6.29					
Min.	Volts	Min.	Volts	Min.	Volts
0	Start	5 50/60	Start	8 33/60	Start
5/60	4.76	5 55/60	3.91	8 45/60	4.42
1/2	4.62	6	3.94	9	4.49
1	4.49	6 1/2	3.94	9 1/2	4.55
1 1/2	4.39	7	3.82	10	4.54
2	4.27	7 1/2	3.64	10 1/2	4.50
2 1/2	4.18	8	3.38	11	4.47
3	4.05	8 1/2	3.02	12	4.28
3 1/2	3.94	8 33/60	3.00	13	4.01
4	3.82			14	3.62
				14 1/2	3.44
5	3.46			15	3.22
5 1/2	3.21			15 27/60	3.00
5 50/60	3.00			15 32/60	2.98
				16	2.82
				16 1/2	2.36
				17	1.83
				17 1/2	1.21
				18	.73
Watt Hrs.	117.088		32.836		54.572

Untreated Battery 3 Tray 2
10 June 1952

Discharge rate 300 amp		Discharge rate 200 amp		Discharge rate 100 amp	
OCV 6.27					
Min.	Volts	Min.	Volts	Min.	Volts
0	Start	6 42/60	Start	8 38/60	Start
5/60	4.88	6 45/60	3.97	8 45/60	4.46
1/2	4.83	7	4.03	9	4.64
1	4.73	7 1/2	3.97	9 1/2	4.70
1 1/2	4.67	8	3.64	10	4.68
2	4.57	8 1/2	3.20	10 1/2	4.68
2 1/2	4.49	8 38/60	3.00	11	4.62
3	4.40			12	4.35
3 1/2	4.32			13	3.56
4	4.23			13 1/2	3.28
4 1/2	4.12			13 50/60	3.00
5	4.00			14	2.89
5 1/2	3.84			14 1/2	2.50
6	3.61			15	1.83
6 1/2	3.21			15 1/2	1.29
6 42/60	3.00			16	.87
Watt Hrs.	142.200		23.896		43.138

APPENDIX 2

Table 2 (Sheet 4)

Untreated Battery 4 Tray 2
10 June 1952

Discharge rate 300 amp		Discharge rate 200 amp		Discharge rate 100 amp	
OCV 6.28					
Min.	Volts	Min.	Volts	Min.	Volts
0	Start	6 38/60	Start	8 36/60	Start
5/60	4.89	6 45/60	4.00	8 45/60	4.51
1/2	4.83	7	4.03	9	4.65
1	4.72	7 1/2	3.93	9 1/2	4.71
1 1/2	4.63	8	3.68	10	4.70
2	4.55	8 1/2	3.20	10 1/2	4.67
2 1/2	4.46	8 36/60	3.00	11	4.56
3	4.35			12	4.28
3 1/2	4.28			13	3.75
4	4.18			14	3.00
4 1/2	4.07			15	2.29
5	3.95			15 1/2	1.90
5 1/2	3.79			16	1.70
6	3.54			16 1/2	1.40
6 1/2	3.13			17	1.03
6 38/60	3.00			17 1/2	.72
Watt Hrs.	139.838		24.481		47.892

APPENDIX 2

Table 2 (Sheet 5)

Untreated Battery 5 Tray 3
10 June 1952

Discharge rate 300 amp		Discharge rate 200 amp		Discharge rate 100 amp	
OCV 6.26					
Min.	Volts	Min.	Volts	Min.	Volts.
0	Start	6 20/60	Start	8 23/60	Start
5/60	4.83	6 1/2	3.98	8 1/2	4.48
1/2	4.74	7	3.96	8 45/60	4.59
1	4.62	7 1/2	3.78	9	4.66
1 1/2	4.51	8	3.45	9 1/2	4.67
2	4.43	8 23/60	3.00	10	4.62
2 1/2	4.34			10 1/2	4.60
3	4.25			11	4.49
3 1/2	4.16			12	4.12
4	4.05			13	3.23
4 1/2	3.93			13 12/60	3.00
5	3.78			13 1/2	2.70
5 1/2	3.60			14	2.07
6	3.31			14 1/2	1.53
6 20/60	3.00			15	.90
				15 15/60	.60
Watt Hrs.	131.254		25.285		39.543

Table 2 (Sheet 6)

Untreated Battery 6 Tray 3
10 June 1952

Discharge rate 300 amp		Discharge rate 200 amp		Discharge rate 100 amp	
OCV 6.27					
Min.	Volts	Min.	Volts	Min.	Volts
0	Start	6 28/60	Start	8 32/60	Start
5/60	4.84	6 35/60	3.97	8 45/60	4.50
1/2	4.75	6 45/60	4.00	9	4.60
1	4.63	7	4.00	9 1/2	4.68
1 1/2	4.64	7 1/2	3.87	10	4.67
2	4.44	8	3.60	10 1/2	4.63
2 1/2	4.38	8 32/60	3.00	11	4.55
3	4.30			12	4.25
3 1/2	4.20			13	3.67
4	4.10			13 1/2	3.30
4 1/2	3.99			13 54/60	3.00
5	3.85			14	2.94
5 1/2	3.70			14 1/2	2.56
6	3.41			15	2.20
6 28/60	3.00			15 1/2	1.82
				16	1.36
				16 1/2	.70
Watt Hrs.	134.959		25.711		45.673

Table 2 (Sheet 7)

Treated Battery 11 Tray 6
10 June 1952

Discharge rate 300 amp		Discharge rate 200 amp		Discharge rate 100 amp	
OCV 6.23					
Min.	Volts	Min.	Volts	Min.	Volts
0	Start	6 38/60	Start	8 45/60	Start
5/60	4.86	6 45/60	3.96	8 55/60	4.42
1/2	4.80	7	4.00	9	4.50
1	4.70	7 1/2	3.91	9 1/2	4.64
1 1/2	4.62	8	3.70	10	4.63
2	4.54	8 1/2	3.33	11	4.58
2 1/2	4.46	8 45/60	3.00	12	4.45
3	4.38			12 1/2	4.30
3 1/2	4.29			13	3.94
4	4.20			13 1/2	3.71
4 1/2	4.09			14	3.45
5	3.96			14 1/2	3.08
5 1/2	3.80			14 35/60	3.00
6	3.56			15	2.67
6 1/2	3.13			15 1/2	2.34
6 38/60	3.00			16	2.00
				16 1/2	1.50
				17	1.08
				17 1/2	.61
Watt Hrs.	139.838		26.182		49.053

APPENDIX 2

Table 2 (Sheet 8)

Treated Battery 12 Tray 6
10 June 1952

Discharge rate 300 amp		Discharge rate 200 amp		Discharge rate 100 amp	
OCV 6.25					
Min.	Volts	Min.	Volts	Min.	Volts
0	Start	7	Start	9 2/60	Start
5/60	4.93	7 5/60	3.90	9 10/60	4.39
1/2	4.86	7 15/60	3.95	9 1/2	4.52
1	4.78	7 1/2	3.94	10	4.57
1 1/2	4.53	8	3.79	10 1/2	4.57
2	4.48	8 1/2	3.47	11	4.53
2 1/2	4.50	9	3.05	12	4.26
3	4.42	9 2/60	3.00	13	3.93
3 1/2	4.36			14	3.58
4	4.25			14 1/2	3.30
4 1/2	4.17			15	2.92
5	4.04			15 1/2	2.57
5 1/2	3.88			16	2.06
6	3.72			16 1/2	1.54
6 1/2	3.44			17	1.20
7	3.00			17 1/2	.70
Watt Hrs.	148.050		24.539		47.403

Table 2 (Sheet 9)

Treated Battery 13 Tray 7
10 June 1952

Discharge rate 300 amp		Discharge rate 200 amp		Discharge rate 100 amp	
OCV 6.27					
Min.	Volts	Min.	Volts	Min.	Volts
0	Start	6 5/60	Start	8 13/60	Start
5/60	4.80	6 15/60	3.95	8 20/60	4.40
1/2	4.71	6 1/2	3.96	8 1/2	4.51
1	4.58	7	3.86	9	4.61
1 1/2	4.48	7 1/2	3.65	9 1/2	4.62
2	4.39	8	3.25	10	4.59
2 1/2	4.29	8 13/60	3.00	10 1/2	4.53
3	4.19			11	4.43
3 1/2	4.10			12	4.08
4	3.98			13	3.41
4 1/2	3.81			13 1/2	3.00
5	3.64			14	2.60
5 1/2	3.42			14 1/2	2.08
6	3.07			15	1.39
6 5/60	3.00			15 1/2	.85
				15 45/60	.64
Watt Hrs.	124.564		26.129		42.897

APPENDIX 2

Table 2 (Sheet 10)

Treated Battery 14 Tray 7
10 June 1952

Discharge rate 300 amp		Discharge rate 200 amp		Discharge rate 100 amp	
OCV 6.29					
Min.	Volts	Min.	Volts	Min.	Volts
0	Start	6 20/60	Start	8 33/60	Start
5/60	4.87	6 1/2	3.97	8 45/60	4.45
1/2	4.78	7	3.93	9	4.53
1	4.64	7 1/2	3.75	9 1/2	4.58
1 1/2	4.54	8	3.47	10	4.58
2	4.44	8 1/2	3.05	10 1/2	4.54
2 1/2	4.34	8 33/60	3.00	11	4.47
3	4.25			12	4.13
3 1/2	4.14			13	3.71
4	4.04			14	3.09
4 1/2	3.90			14 6/60	3.00
5	3.77			14 1/2	2.50
5 1/2	3.56			15	2.00
6	3.29			15 1/2	1.48
6 20/60	3.00			16	1.04
				16 1/2	.72
Watt Hrs.	131.238		26.909		44.052

Table 2 (Sheet 11)

Untreated Battery 15 Tray 8
10 June 1952

Discharge rate 300 amp		Discharge rate 200 amp		Discharge rate 100 amp	
OCV 6.27					
Min.	Volts	Min.	Volts	Min.	Volts
0	Start	6 4/60	Start	8 15/60	Start
5/60	4.72	6 15/60	4.00	8 1/2	4.55
1/2	4.61	6 1/2	4.01	9	4.66
1	4.52	7	3.89	9 1/2	4.67
1 1/2	4.44	7 1/2	3.63	10	4.63
2	4.36	8	3.25	10 1/2	4.57
2 1/2	4.28	8 15/60	3.00	11	4.48
3	4.19			12	4.14
3 1/2	4.10			13	3.53
4	3.99			14	1.55
4 1/2	3.84			14 15/60	1.00
5	3.68			14 1/2	.71
5 1/2	3.44				
6	3.07				
6 4/60	3.00				

Watt Hrs. 124.009 26.886 38.724

APPENDIX 2

Table 2 (Sheet 12)

Untreated Battery 16 Tray 8
10 June 1952

Discharge rate 300 amp		Discharge rate 200 amp		Discharge rate 100 amp	
OCV 6.22					
Min.	Volts	Min.	Volts	Min.	Volts
0	Start	6 3/60	Start	8	Start
5/60	4.78	6 15/60	4.02	8 12/60	4.55
1/2	4.70	6 1/2	4.06	8 1/2	4.70
1	4.63	7	3.90	9	4.74
1 1/2	4.57	7 1/2	3.54	9 1/2	4.73
2	4.49	8	3.00	10	4.68
2 1/2	4.42			10 1/2	4.63
3	4.33			11	4.48
3 1/2	4.23			12	4.02
4	4.13			12 1/2	3.60
4 1/2	3.99			12 53/60	3.00
5	3.81			13	2.90
5 1/2	3.55			13 1/2	2.08
6	3.03			14	1.20
6 3/60	3.00			14 15/60	.70
				14 1/2	.50
Watt Hrs.	126.752		24.180		39.084

Table 2 (Sheet 13)

Treated Battery 21 Tray 11
9 June 1952

Discharge rate 300 amp		Discharge rate 200 amp		Discharge rate 100 amp	
OCV 6.26					
Min.	Volts	Min.	Volts	Min.	Volts
0	Start	7 5/60	Start	9 2/60	Start
5/60	4.67	7 15/60	3.85	9 10/60	4.35
1/2	4.57	7 1/2	3.88	9 1/2	4.50
1	4.49	8	3.75	10	4.55
1 1/2	4.42	8 1/2	3.45	10 1/2	4.52
2	4.34	9 2/60	3.00	11	4.51
2 1/2	4.29			12	4.36
3	4.19			13	3.95
3 1/2	4.07			14	3.47
4	3.99			14 36/60	3.00
4 1/2	3.89			15 10/60	2.25
5	3.78			15 1/2	1.52
5 1/2	3.60			15 40/60	1.40
6	3.40			16	.90
6 1/2	3.30				
7	3.15				
7 5/60	3.00				
Watt Hrs.	141.638		23.345		42.079

Table 2 (Sheet 14)

Untreated Battery 22 Tray 11
9 June 1952

Discharge rate 300 amp		Discharge rate 200 amp		Discharge rate 100 amp	
OCV 6.23					
Min.	Volts	Min.	Volts	Min.	Volts
0	Start	6 58/60	Start	8 47/60	Start
5/60	4.88	7 3/60	3.98	8 55/60	4.30
1/2	4.80	7 10/60	4.05	9	4.50
1	4.72	7 1/2	4.05	9 10/60	4.61
1 1/2	4.68	8	3.89	9 1/2	4.70
2	4.62	8 1/2	3.51	10	4.75
2 1/2	4.55	8 47/60	3.00	11	4.70
3	4.48			11 1/2	4.65
3 1/2	4.40			12	4.52
4	4.31			13	4.05
4 1/2	4.22			13 1/2	3.48
5	4.11			14	2.81
5 1/2	3.99			14 1/2	1.97
6	3.80			15	1.28
6 1/2	3.50			15 1/2	.70
6 58/60	3.00			15 40/60	.60
Watt Hrs.	149.282		22.993		40.795

APPENDIX 2

Table 2 (Sheet 15)

Treated Battery 23 Tray 12
9 June 1952

Discharge rate 300 amp		Discharge rate 200 amp		Discharge rate 100 amp	
OCV 6.28					
Min.	Volts	Min.	Volts	Min.	Volts
0	Start	6 20/60	Start	9 5/60	Start
5/60	4.88	6 25/60	3.92	9 7/60	4.25
1/2	4.76	6 1/2	3.96	9 15/60	4.38
1	4.62	7	3.96	9 1/2	4.48
1 1/2	4.53	7 1/2	3.83	10	4.57
2	4.43	8	3.63	10 1/2	4.58
2 1/2	4.32	8 1/2	3.40	11	4.57
3	4.26	9 5/60	3.00	11 1/2	4.52
3 1/2	4.17			12	4.45
4	4.04			12 1/2	4.39
4 1/2	3.92			13	4.30
5	3.75			13 1/2	4.22
5 1/2	3.54			14	4.08
6	3.28			14 1/2	3.90
6 20/60	3.00			15	3.72
				15 1/2	3.55
				16	3.40
				16 1/2	3.24
				17	3.06
				17 10/60	3.00
				17 1/2	2.82
				18	2.50
				18 1/2	2.18
				19	1.80
				19 1/2	1.43
				20	1.07
				20 10/60	.90
Watt Hrs.	130.938		33.465		64.222

Table 2 (Sheet 16)

Untreated Battery 24 Tray 12
9 June 1952

Discharge rate 300 amp		Discharge rate 200 amp		Discharge rate 100 amp	
OCV 6.28					
Min.	Volts	Min.	Volts	Min.	Volts
0	Start	6 45/60	Start	9	Start
5/60	4.90	6 50/60	3.95	9 14/60	4.20
1/2	4.82	7	4.00	9 1/2	4.50
1	4.72	7 1/2	3.99	10	4.61
1 1/2	4.65	8	3.83	10 1/2	4.65
2	4.53	8 1/2	3.59	11	4.63
2 1/2	4.46	9	3.22	11 1/2	4.60
3	4.38			12	4.54
3 1/2	4.30			12 1/2	4.46
4	4.20			13	4.38
4 1/2	4.10			13 1/2	4.29
5	3.97			14	4.11
5 1/2	3.80			14 1/2	3.90
6	3.57			15	3.65
6 1/2	3.25			15 1/2	3.43
6 45/60	3.00			16	3.23
				16 33/60	3.00
				17	2.72
				17 1/2	2.20
				18	1.68
				18 1/2	1.20
				19	.73
Watt Hrs.	142.349		29.882		57.868

*

Treated Battery 27 Tray 14
9 June 1952

Discharge rate 300 amp		Discharge rate 200 amp		Discharge rate 100 amp	
OCV 6.28					
Min.	Volts	Min.	Volts	Min.	Volts
0	Start	6 58/60	Start	9 33/60	Start
5/60	4.95	7 5/60	3.92	9 44/60	4.35
1/2	4.89	7 15/60	4.02	10	4.52
1	4.81	7 1/2	4.04	10 1/2	4.60
1 1/2	4.73	8	3.92	11	4.61
2	4.64	8 1/2	3.75	12	4.54
2 1/2	4.57	9	3.46	13	4.34
3	4.48	9 1/2	3.02	14	4.09
3 1/2	4.40	9 33/60	3.00	15	3.68
4	4.31			15 1/2	3.50
4 1/2	4.22			16	3.28
5	4.10			16 35/60	3.00
5 1/2	3.95			17	2.85
6	3.74			17 1/2	2.53
6 1/2	3.42			18	2.11
6 58/60	3.00			18 1/2	1.55
				19	1.15
				19 1/2	.70
Watt Hrs.	149.508		31.858		56.810

APPENDIX 2

Table 2 (Sheet 18)

Untreated Battery 28 Tray 14
9 June 1952

Discharge rate 300 amp		Discharge rate 200 amp		Discharge rate 100 amp	
OCV 6.26					
Min.	Volts	Min.	Volts	Min.	Volts
0	Start	7 1/2	Start	9 34/60	Start
5/60	4.95	7 35/60	3.90	9 45/60	4.45
1/2	4.92	7 45/60	4.00	10	4.63
1	4.84	8	4.02	10 1/2	4.69
1 1/2	4.78	8 1/2	3.89	11	4.69
2	4.69	9	3.61	12	4.61
2 1/2	4.62	9 1/2	3.09	13	4.35
3	4.55	9 34/60	3.00	14	4.00
3 1/2	4.48			15	3.39
4	4.40			15 1/2	3.00
4 1/2	4.34			16	2.64
5	4.22			16 1/2	2.25
5 1/2	4.12			17	1.93
6	4.00			17 1/2	1.60
6 1/2	3.80			18	1.26
7	3.53			18 1/2	1.00
7 1/2	3.00			19	.63
Watt Hrs.	162.375		25.339		51.239

APPENDIX 2

Table 2 (Sheet 19)

Untreated Battery 29 Tray 15
10 June 1952

Discharge rate 300 amp		Discharge rate 200 amp		Discharge rate 100 amp	
	OCV 6.22				
Min.	Volts	Min.	Volts	Min.	Volts
0	Start	5 52/60	Start	8 27/60	Start
5/60	4.85	6	3.94	8 1/2	4.35
1/2	4.77	6 15/60	4.04	8 45/60	4.53
1	4.67	6 1/2	4.04	9	4.61
1 1/2	4.56	7	3.93	9 1/2	4.67
2	4.48	7 1/2	3.70	10	4.67
2 1/2	4.39	8	3.37	10 1/2	4.64
3	4.29	8 27/60	3.00	11	4.60
3 1/2	4.19			12	4.45
4	4.08			13	4.17
4 1/2	3.92			14	3.74
5	3.73			14 1/2	3.50
5 1/2	3.40			15	3.16
5 52/60	3.00			15 20/60	3.00
				15 1/2	2.89
				16	2.49
				16 1/2	2.14
				17	1.69
				17 1/2	1.33
				18	.82
Watt Hrs.	123.566		32.031		56.341

APPENDIX 2

Table 2 (Sheet 20)

Treated Battery 30 Tray 15
10 June 1952

OCV 6.22

Discharge rate 300 amp		Discharge rate 200 amp		Discharge rate 100 amp	
Min.	Volts	Min.	Volts	Min.	Volts
0	Start	5 50/60	Start	8 25/60	Start
5/60	4.82	6	3.96	8 1/2	4.40
1/2	4.74	6 1/2	4.00	8 45/60	4.53
1	4.62	7	3.85	9	4.58
1 1/2	4.53	7 1/2	3.68	9 1/2	4.60
2	4.43	8	3.36	10	4.60
2 1/2	4.34	8 25/60	3.00	10 1/2	4.57
3	4.24			11	4.50
3 1/2	4.14			12	4.32
4	4.00			13	4.08
4 1/2	3.84			14	3.76
5	3.64			14 1/2	3.55
5 1/2	3.30			15	3.29
5 50/60	3.00			15 1/2	3.00
				16	2.72
				16 1/2	2.44
				17	2.28
				17 1/2	1.98
				18	1.67
				18 1/2	1.32
				19	1.07
				19 1/2	.71
Watt Hrs.	121.296		31.747		60.634

APPENDIX 2

Table 2 (Sheet 21)

Untreated Battery 31 Tray 16
11 June 1952

Discharge rate 300 amp		Discharge rate 200 amp		Discharge rate 100 amp	
OCV 6.27					
Min.	Volts	Min.	Volts	Min.	Volts
0	Start	4 9/60	Start	6 53/60	Start
5/60	4.60	4 20/60	3.95	7	4.41
1/2	4.40	4.1/2	4.00	7 1/2	4.58
1	4.25	5	3.95	8	4.60
1 1/2	4.13	5 1/2	3.93	8 1/2	4.57
2	3.95	6	3.63	9	4.52
2 1/2	3.80	6 1/2	3.40	10	4.29
3	3.64	6 53/60	3.00	11	4.00
3 1/2	3.40			11 1/2	3.75
4	3.12			12	3.57
4 9/60	3.00			12 1/2	3.37
				13	3.16
				13 25/60	3.00
				14	2.80
				14 1/2	2.25
				15	1.82
				15 1/2	1.44
				16	1.12
				16 1/2	.73
Watt Hrs.	80.695		33.901		53.020

Table 2 (Sheet 22)

Treated Battery 32 Tray 16
11 June 1952

Discharge rate 300 amp		Discharge rate 200 amp		Discharge rate 100 amp	
OCV 6.27					
Min.	Volts	Min.	Volts	Min.	Volts
0	Start	4 4/60	Start	7 6/60	Start
5/60	4.62	4 15/60	3.92	7 15/60	4.40
1/2	4.42	4 1/2	3.97	7 1/2	4.50
1	4.22	5	3.92	8	4.56
1 1/2	4.08	5 1/2	3.81	8 1/2	4.58
2	3.92	6	3.64	9	4.53
2 1/2	3.78	6 1/2	3.38	10	4.42
3	3.59	7 6/60	3.00	11	4.21
3 40/60	3.28			12	3.89
4 4/60	3.00			12 1/2	3.68
				13	3.42
				13 1/2	3.15
				13 44/60	3.00
				14	2.82
				14 1/2	2.50
				15	2.12
				15 1/2	1.74
				16	1.29
				16 1/2	.72
Watt Hrs.	78.896		37.031		53.983

Table 3. Recovery Discharge, July 7, 1952.

Battery 21
7 July 1952

OCV 6.03

Discharge rate 50 amp						Discharge rate 10 amp			
Min.	Sec.	Volts	Min.	Sec.	Volts	Min.	Volts	Min.	Volts
0	5	5.60	8	00	4.95	14:53	Start	75	1.60
0	30	5.48	8	30	4.90	15	4.80	80	1.38
1	00	5.48	9	00	4.85	20	5.22	85	1.21
1	30	5.48	9	30	4.80	25	5.25	90	1.25
2	00	5.47	10	00	4.74	30	5.23	95	1.22
2	30	5.43	10	30	4.66	35	4.95	100	1.21
3	00	5.40	11	00	4.59	40	4.52	101	1.21
3	30	5.36	11	30	4.45	45	3.89	102	1.20
4	00	5.32	12	00	4.30	50	3.30	103	1.17
4	30	5.29	12	30	4.18	55	3.10	104	1.10
5	00	5.23	13	00	3.85	60	2.81	105	1.00
5	30	5.19	13	30	3.10	65	2.60		
6	00	5.15	14	00	2.25	70	1.99		
6	30	5.10	14	30	1.50				
7	00	5.05	14	53	1.00				
7	30	5.00							
Watt Hours					57.674				44.943

Battery 22
7 July 1952

OCV 6.01

Discharge rate 50 amp						Discharge rate 10 amp			
0	5	5.60	7	00	4.82	12:02	Start	60	1.23
0	30	5.46	7	30	4.78	13	5.22	65	1.28
1	00	5.46	8	00	4.71	15	5.36	70	1.27
1	30	5.43	8	30	4.66	20	5.37	71	1.25
2	00	5.40	9	00	4.57	25	5.35	72	1.24
2	30	5.33	9	30	4.44	30	5.29	73	1.21
3	00	5.29	10	00	4.27	35	4.95	74	1.18
3	30	5.22	10	30	4.12	40	3.75	75	1.10
4	00	5.15	11	00	3.90	45	2.71	75:05	1.00
4	30	5.09	11	30	3.00	50	1.65		
5	00	5.02	12	00	1.02	55	1.20		
5	30	4.99	12	02	1.00				
6	00	4.92							
6	30	4.88							
Watt Hours					47.028				33.894

APPENDIX 2, Table 3, Sheet 2.

Battery 23
7 July 1952

	Discharge rate 50 amp				Discharge rate 10 amp			
CCV 6.04								
Min.	Sec.	Volts	Min.	Sec.	Volts	Min.	Volts	Min.	Volts
0	5	5.60	9	00	4.98	17:23	Start	100	1.30
0	30	5.50	9	30	4.90	18	4.84	105	1.21
1	00	5.50	10	00	4.84	20	5.10	110	1.11
1	30	5.50	10	30	4.78	25	5.20	111	1.10
2	00	5.48	11	00	4.70	30	5.21	112	1.08
2	30	5.45	11	30	4.63	35	5.20	113	1.02
3	00	5.42	12	00	4.53	40	5.20	113:30	1.00
3	30	5.40	12	30	4.43	45	5.11		
4	00	5.38	13	00	4.34	50	5.00		
4	30	5.35	13	30	4.24	55	4.78		
5	00	5.30	14	00	4.14	60	4.67		
5	30	5.26	14	30	4.01	65	4.30		
6	00	5.22	15	00	3.85	70	3.70		
6	30	5.20	15	30	3.60	75	3.30		
7	00	5.18	16	00	3.10	80	2.92		
7	30	5.12	16	30	2.45	85	2.33		
8	00	5.08	17	00	1.65	90	1.83		
8	30	5.02	17	23	1.00	95	1.50		
Watt Hours					67.289				57.567

APPENDIX 2, Table 3, Sheet 3

Battery 24
7 July 1952

OCV 6.06

Discharge rate 50 amp			Discharge rate 10 amp	
Min.	Sec.	Volts	Min.	Volts
0	5	5.62	18:55	Start
0	30	5.50	19	4.20
1	00	5.52	20	4.90
1	30	5.52	25	5.10
2	00	5.50	30	5.13
2	30	5.48	35	5.13
3	00	5.48	40	4.92
3	30	5.45	45	4.87
4	00	5.44	50	4.70
4	30	5.40	55	4.20
5	00	5.38	60	3.87
5	30	5.35	65	3.60
6	00	5.32	70	3.40
6	30	5.30	75	3.30
7	00	5.27	80	3.25
7	30	5.22	85	3.16
8	00	5.20	90	3.02
8	30	5.15	95	2.55
9	00	5.10	100	2.34
9	30	5.05	105	2,20
10	00	5.01	106	2.10
10	30	4.97	107	1.93
11	00	4.93	108	1.70
11	30	4.87	109	1.50
12	00	4.80	110	1.30
12	30	4.73	111	1.00
13	00	4.63		
13	30	4.55		
14	00	4.44		
14	30	4.35		
15	00	4.22		
15	30	4.00		
16	00	3.50		
16	30	2.80		
17	00	1.95		
17	30	1.83		
18	00	1.70		
18	30	1.50		
18	55	1.00		

Watt hours	71.812	57.558

APPENDIX 2, Table 3, Sheet 4.

Battery 27
7 July 1952

OCV 6.02

Discharge rate 50 amp			Discharge rate 10 amp	
Min.	Sec.	Volts	Min.	Volts
0	5	5.48	15:45	Start
0	30	5.45	16	4.80
1	00	5.45	21	5.25
1	30	5.45	26	5.26
2	00	5.43	31	5.25
2	30	5.41	36	5.23
3	00	5.40	41	5.19
3	30	5.36	46	5.15
4	00	5.32	51	5.07
4	30	5.30	56	4.92
5	00	5.26	61	4.59
5	30	5.22	66	4.01
6	00	5.19	71	3.62
6	30	5.15	76	1.90
7	00	5.10	77	1.42
7	30	5.05	77:51	1.00
8	00	5.00		
8	30	4.94		
9	00	4.89		
9	30	4.82		
10	00	4.78		
10	30	4.72		
11	00	4.67		
11	30	4.60		
12	00	4.51		
12	30	4.40		
13	00	4.30		
13	30	4.10		
14	00	3.90		
14	30	3.70		
15	00	3.50		
15	30	3.25		
15	45	3.00		
Watt hours		63.2955		48.047

APPENDIX 2, Table 3, Sheet 5.

Battery 28
7 July 1952

Discharge rate
50 amp

OCV 6.01

Min.	Sec.	Volts
0	5	5.60
0	30	5.48
1	00	5.49
1	30	5.49
2	00	5.48
2	30	5.45
3	00	5.40
3	30	5.38
4	00	5.35
4	30	5.32
5	00	5.30
5	30	5.22
6	00	5.18
6	30	5.12
7	00	5.10
7	30	5.07
8	00	5.03
8	30	5.00
9	00	4.96
9	30	4.90
10	00	4.87
10	30	4.82
11	00	4.78
11	30	4.70
12	00	4.60
12	30	4.47
13	00	4.37
13	30	4.23
14	00	3.80
14	25	3.00

Discharge rate
10 amp

Min.	Volts
14:25	Start
15	5.23
20	5.40
25	5.40
30	5.37
35	5.32
40	5.20
45	4.80
50	3.58
55	3.23
60	3.27
65	3.26
70	3.26
75	3.24
80	3.22
85	3.12
90	2.48
95	2.38
100	2.08
101	1.17
102	1.08
102:05	1.00

Watt hours	59.862	56.052

APPENDIX 2, Table 3, Sheet 6.

Battery 29
7 July 1952

Discharge rate
50 amp

OCV 6.05

Min.	Sec.	Volts
0	5	5.65
0	30	5.54
1	00	5.55
1	30	5.55
2	00	5.54
2	30	5.52
3	00	5.51
3	30	5.50
4	00	5.49
4.	30	5.48
5	00	5.45
5	30	5.42
6	00	5.40
6	30	5.39
7	00	5.38
7	30	5.35
8	00	5.31
8	30	5.30
9	00	5.28
9	30	5.22
10	00	5.20
10	30	5.18
11	00	5.13
11	30	5.10
12	00	5.05
12	30	5.02
13	00	4.98
13	30	4.93
14	00	4.88
14	30	4.81
15	00	4.75
15	30	4.65
16	00	4.55
16	30	4.41
17	00	4.30
17	30	4.15
18	00	3.98
18	30	3.61
19	00	3.05
19	30	2.30
20	00	1.25
20	10	1.00
Watt hours		81.489

Discharge rate
10 amp

Min.	Volts
20:10	Start
21	4.98
26	5.35
31	5.39
36	5.40
41	5.39
46	5.38
51	5.35
56	5.32
61	5.30
66	5.30
71	5.27
76	5.22
81	5.15
86	5.00
91	4.76
96	4.60
101	3.78
106	3.05
111	2.80
116	2.30
121	1.66
126	1.28
131	1.18
132	1.15
133	1.11
134	1.02
134:35	1.00
	81.199

APPENDIX 2, Table 3, Sheet 7.

Battery 30
7 July 1952

Discharge rate 50 amp			Discharge rate 50 amp			Discharge rate 10 amp	
OCV 6.05							
Min.	Sec.	Volt	Min.	Sec.	Volt	Min.	Volt
0	5	5.65				21:24	Start
0	30	5.51	20	00	2.70	22	4.80
1	00	5.53	20	30	2.20	25	5.19
1	30	5.52	21	00	1.60	30	5.25
2	00	5.51	21	24	1.00	35	5.27
2	30	5.50				40	5.28
3	00	5.49				45	5.27
3	30	5.49				50	5.25
4	00	5.45				55	5.25
4	30	5.43				60	5.21
5	00	5.41				65	5.20
5	30	5.40				70	5.15
6	00	5.39				75	5.10
6	30	5.36				80	5.02
7	00	5.34				85	4.90
7	30	5.31				90	4.61
8	00	5.30				95	4.37
8	30	5.27				100	3.88
9	00	5.25				105	3.39
9	30	5.22				110	2.70
10	00	5.20				115	2.10
10	30	5.16				120	1.50
11	00	5.11				121	1.40
11	30	5.09				122	1.31
12	00	5.03				123	1.24
12	30	5.00				124	1.20
13	00	4.97				125	1.12
13	30	4.90				126	1.04
14	00	4.85				127	1.00
14	30	4.78					
15	00	4.70					
15	30	4.63					
16	00	4.52					
16	30	4.42					
17	00	4.31					
17	30	4.20					
18	00	4.02					
18	30	3.83					
19	00	3.52					
19	30	3.18					
Watt hours					84.434		76.255

APPENDIX 2, Table 3, Sheet 8.

Battery 31
6 March 1953

Discharge rate 50 amp			Discharge rate 10 amp	
OCV 6.03				
Min.	Sec.	Volts	Min.	Volts
0	5	5.35	6.37	Start
0	30	4.98	7	3.60
1	00	4.86	12	3.38
1	30	4.57	17	3.21
2	00	4.41	22	2.95
2	30	4.25	27	2.58
3	00	4.03	32	1.45
3	30	3.80	37	1.11
4	00	2.70	38	1.11
4	30	2.00	39	1.10
5	00	1.94	40	1.08
5	30	1.85	41	1.00
6	00	1.60		
6	30	1.15		
6	37	1.00		
Watt hours		18.466		14.227

APPENDIX 2, Table 3, Sheet 9.

Battery 32
6 March 1953

	Discharge rate 50 amp			Discharge rate 10 amp	
OCV 6.04					
	Min.	Sec.	Volts	Min.	Volts
	0	5	5.41	7:26	Start
	0	30	5.15	8	3.30
	1	00	4.98	13	3.46
	1	30	4.80	18	3.25
	2	00	4.62	23	3.06
	2	30	4.41	28	2.85
	3	00	4.23	33	2.59
	3	30	4.05	38	1.76
	4	00	3.75	43	1.08
	4	30	3.20	44	1.06
	5	00	2.10	45	1.06
	5	30	1.85	46	1.06
	6	00	1.79	47	1.05
	6	30	1.65	48	1.02
	7	00	1.36	48:47	1.00
	7	26	1.00		
Watt hours			21.193		17.557

Table 4.1a Charging data for June 1952 test batteries after 8 months storage.
Cycle 1 : Charged for 10 hours at 5 amperes

TRAY Number 1

On Charge 6:00 a.m. 3/4/53

Battery	Cell	Time	Temperature	Specific Gravity	Volts
1T	1	4 Mar.	27.0		2.12
	2	6.00 am	27.2		2.22
	3		27.0		2.21
2T	1		27.4		2.18
	2		27.2		2.11
	3		27.0		2.18
1T	1	8.00 am	26.6	1.148	2.11
	2		27.3	1.156	2.20
	3		27.7	1.129	2.20
2T	1		27.2	1.128	2.18
	2		27.6	1.140	2.10
	3		27.5	1.139	2.16
1T	1	12.00 N	28.6	1.175	2.14
	2		29.2	1.190	2.18
	3		28.1	1.165	2.22
2T	1		29.3	1.165	2.19
	2		29.1	1.163	2.13
	3		28.6	1.170	2.17
1T	1	3.00pm.	28.6	1.185	2.17
	2		28.8	1.205	2.21
	3		29.9	1.180	2.24
2T	1		29.6	1.185	2.21
	2		29.0	1.175	2.16
	3		29.0	1.185	2.19

Off Charge 4:00 p.m. 3/4/53

Table 4.1a Continued (Sheet 2)

TRAY Number 2

On Charge 6:00 a.m. 3/4/53

Battery	Cell	Time	Temperature	Specific Gravity	Volts
3U	1	4 Mar.	27.0		2.17
	2	6.00am	27.2		2.15
	3		27.5		2.15
4U	1		27.0		2.17
	2		27.0		2.17
	3		27.3		2.17
3U	1	8.00am	27.1	1.108	2.15
	2		27.4	1.106	2.12
	3		27.9	1.098	2.14
4U	1		27.3	1.112	2.15
	2		27.2	1.111	2.14
	3		27.6	1.105	2.15
3U	1	12.00N	29.0	1.138	2.16
	2		29.5	1.135	2.13
	3		29.2	1.130	2.15
4U	1		29.2	1.145	2.16
	2		29.5	1.145	2.15
	3		28.6	1.137	2.17
3U	1	3.00 pm	29.0	1.165	2.18
	2		29.2	1.162	2.15
	3		29.7	1.153	2.17
4U	1		29.4	1.170	2.18
	2		29.4	1 165	2.17
	3		29.4	1.158	2.19

Off Charge 4:00 p.m. 3/4/53

Table 4.1a Continued (Sheet 3)

TRAY Number 3

On Charge 6:00 a.m. 3/4/53

Battery	Cell	Time	Temperature	Specific Gravity	Volts
5U	1	4 Mar.	26.8		2.15
	2	6.00 am	26.9		2.17
	3		27.1		2.16
6U	1		26.5		2.17
	2		26.5		2.15
	3		26.7		2.16
5U	1	8.00 am	27.8	1.118	2.15
	2		27.1	1.120	2.16
	3		27.0	1.110	2.14
6U	1		27.5	1.113	2.16
	2		26.8	1.110	2.14
	3		26.8	1.117	2.15
5U	1	12.00 N	28.9	1.145	2.17
	2		29.3	1.155	2.18
	3		28.9	1.138	2.16
6U	1		28.8	1.145	2.17
	2		29.0	1.135	2.17
	3		28.3	1.142	2.17
5U	1	3.00pm	29.0	1.170	2.20
	2		29.2	1.187	2.20
	3		29.6	1.160	2.19
6U	1		29.0	1.165	2.19
	2		28.7	1.155	2.19
	3		28.7	1.165	2.20

Off Charge 4:00 p.m. 3/4/53

Table 4.1a Continued (Sheet 4)

TRAY Number 6

On Charge 6:00 a.m. 3/4/53

Battery	Cell	Time	Temperature	Specific Gravity	Volts
11 T	1	4 Mar.	27.0		2.14
	2	6.00 am	26.8		2.14
	3		26.6		2.14
12 T	1		26.8		2.14
	2		26.8		2.14
	3		26.5		2.14
11 T	1	8.00am	26.8	1.106	2.14
	2		27.2	1.111	2.13
	3		27.1	1.105	2.13
12 T	1		26.9	1.116	2.14
	2		27.0	1.116	2.13
	3		27.0	1.119	2.14
11 T	1	12.00 N	28.6	1.138	2.15
	2		29.0	1.145	2.14
	3		28.6	1.135	2.14
12 T	1		29.0	1.153	2.15
	2		28.8	1.152	2.15
	3		28.3	1.155	2.16
11 T	1	3.00pm	29.0	1.155	2.17
	2		28.8	1.165	2.15
	3		29.0	1.175	2.16
12 T	1		29.2	1.172	2.17
	2		28.7	1.173	2.17
	3		28.7	1.175	2.18

Off Charge 4:00 p.m. 3/4/53

Table 4.1a Continued (Sheet 5)

TRAY Number 7

On Charge 6:00 a.m. 3/4/53

Battery	Cell	Time	Temperature	Specific Gravity	Volts
13T	1	4 Mar.	27.5		2.14
	2	6.00 am	27.3		2.15
	3		27.0		2.15
14T	1		27.5		2.17
	2		27.5		2.16
	3		27.2		2.14
13T	1	8.00 am	27.8	1.121	2.14
	2		27.8	1.125	2.14
	3		27.6	1.130	2.14
14T	1		27.7	1.130	2.14
	2		27.7	1.130	2.15
	3		27.3	1.128	2.14
13T	1	12.00N	30.2	1.142	2.15
	2		30.0	1.155	2.17
	3		29.7	1.158	2.17
14T	1		29.4	1.155	2.16
	2		29.7	1.152	2.17
	3		29.2	1.145	2.16
13T	1	3.00pm	30.5	1.165	2.19
	2		29.6	1.175	2.19
	3		29.7	1.182	2.19
14T	1		30.0	1.178	2.19
	2		29.4	1.177	2.19
	3		29.5	1.170	2.19

Off Charge 4:00 p.m. 3/4/53

Table 4.1s Continued (Sheet 6)

TRAY Number 8

On Charge 6:00 a.m. 3/4/53

Battery	Cell	Time	Temperature	Specific Gravity	Volts
15U	1	4 Mar.	27.2		2.13
	2	6.00am	27.3		2.11
	3		27.8		2.11
16U	1		27.4		2.11
	2		27.5		2.11
	3		27.7		2.11
15U	1	8.00am	27.2	1.140	2.13
	2		27.5	1.095	2.10
	3		28.0	1.082	2.10
16U	1		27.5	1.083	2.09
	2		27.3	1.081	2.09
	3		27.4	1.084	2.09
15U	1	12.00 N	29.2	1.172	2.17
	2		29.8	1.125	2.13
	3		29.3	1.115	2.13
16U	1		29.4	1.118	2.11
	2		29.4	1.115	2.12
	3		28.8	1.117	2.12
15U	1	3.00pm	28.8	1.190	2.20
	2		29.3	1.148	2.15
	3		29.7	1.138	2.15
16U	1		29.6	1.140	2.14
	2		29.4	1.135	2.15
	3		29.3	1.140	2.15

Off Charge 4:00 p.m. 3/4/53

Table 4.1a Continued (Sheet 7)

TRAY Number 11

On Charge 6:00 a.m. 3/4/53

Battery	Cell	Time	Temperature	Specific Gravity	Volts
21T	1	4 Mar.	27.6		2.11
	2	6.00 am	27.7		2.09
	3		27.5		2.10
22M*	1		28.0		2.12
	2		27.9		2.12
	2		27.2		2.09
21T	1	8.00 am	27.3	1.126	2.10
	2		27.5	1.124	2.09
	3		27.5	1.117	2.10
22M*	1		28.0	1.108	2.11
	2		28.0	1.112	2.10
	3		27.5	1.108	2.09
21T	1	12.00 N	28.6	1.150	2.13
	2		29.4	1.142	2.12
	3		29.6	1.142	2.13
22M*	1		29.5	1.138	2.13
	2		29.7	1.140	2.14
	3		29.2	1.140	2.12
21T	1	3.00 pm	28.6	1.165	2.15
	2		29.6	1.165	2.15
	3		30.0	1.165	2.15
22M*	1		29.6	1.165	2.15
	2		30.0	1.162	2.17
	3		29.4	1.165	2.15

M* = $MgSO_4$-Na_2SO_4

Off Charge 4:00 p.m. 3/4/53

Table 4.1a Continued (Sheet 8)

TRAY Number 12

On Charge 6:00 a.m. 3/4/53

Battery	Cell	Time	Temperature	Specific Gravity	Volts
23T	1	4 Mar.	27.7		2.10
	2	6.00 am	27.7		2.11
	3		27.5		2.10
24U	1		27.7		2.10
	2		27.7		2.09
	3		27.7		2.12
23T	1	8.00 am	27.8	1.087	2.09
	2		27.8	1.102	2.10
	3		27.2	1.093	2.08
24U	1		27.5	1.075	2.09
	2		27.6	1.079	2.08
	3		27.8	1.080	2.10
23T	1	12.00 N	28.8	1.130	2.11
	2		29.4	1.137	2.11
	3		29.3	1.132	2.11
24U	1		29.3	1.110	2.10
	2		29.5	1.115	2.10
	3		28.7	1.112	2.11
23T	1	3.00 pm	29.0	1.145	2.13
	2		29.4	1.165	2.13
	3		29.4	1.153	2.13
24U	1		29.7	1.132	2.13
	2		29.4	1.135	2.12
	3		29.3	1.135	2.13

Off Charge 4:00 p.m. 3/4/53

Table 4.1a Continued (Sheet 9)

TRAY Number 14

On Charge 6:00 a.m. 3/4/53

Battery	Cell	Time	Temperature	Specific Gravity	Volts
27T	1	4 Mar.	27.4	.	2.09
	2	6.00 am	27.3		2.14
	3		26.8		2.11
28U	1		27.0		2.12
	2		27.0		2.11
	3		27.1		2.10
27T	1	8.00 am	27.0	1.081	2.09
	2		27.1	1.098	2.12
	3		27.1	1.088	2.10
28U	1		27.0	1.071	2.10
	2		27.0	1.067	2.10
	3		27.0	1.065	2.09
27T	1	12.00N	28.5	1.115	2.10
	2		29.0	1.135	2.13
	3		28.7	1.120	2.11
28U	1		28.7	1.115	2.11
	2		28.7	1.105	2.11
	3		27.8	1.105	2.10
27T	1	3.00pm	28.7	1.135	2.12
	2		29.2	1.165	2.15
	3		29.0	1.145	2.13
28U	1		29.0	1.130	2.12
	2		28.5	1.128	2.12
	3		28.4	1.130	2.12

Off Charge 4:00 p.m. 3/4/53

Table 4.1a Continued (Sheet 10)

TRAY Number 15

On Charge 6:00 a.m. 3/4/53

Battery	Cell	Time	Temperature	Specific Gravity	Volts
29U	1	4 Mar.	27.0		2.11
	2	6.00am	27.4		2.11
	3		28.0		2.11
30T	1		27.8		2.10
	2		27.9		2.11
	3		27.4		2.09
29U	1	8.00am	27.6	1.088	2.10
	2		27.4	1.094	2.10
	3		28.0	1.092	2.09
30T	1		27.9	1.107	2.09
	2		28.0	1.107	2.10
	3		27.2	1.110	2.09
29U	1	12.00 N	28.2	1.118	2.13
	2		29.0	1.127	2.13
	3		28.7	1.117	2.11
30T	1		28.7	1.142	2.12
	2		29.0	1.143	2.13
	3		28.8	1.140	2.12
29U	1	3.00pm	28.2	1.135	2.15
	2		28.7	1.150	2.15
	3		29.2	1.135	2.14
30T	1		28.8	1.162	2.15
	2		29.0	1.165	2.15
	3		28.8	1.158	2.14

Off Charge 4:00 p.m. 3/4/53

Table 4.1a Continued (Sheet 11)

TRAY Number 16

On Charge 6:00 a.m. 3/4/53

Battery	Cell	Time	Temperature	Specific Gravity	Volts
31U	1	4 Mar.	27.8		2.16
	2	6.00am	28.0		2.13
	3		28.0		2.16
32T	1		28.2		2.14
	2		28.4		2.20
	3		27.8		2.14
31U	1	8.00am	27.8	1.120	2.18
	2		28.0	1.113	2.14
	3		28.2	1.126	2.18
32T	1		28.3	1.135	2.14
	2		28.1	1.157	2.20
	3		27.8	1.150	2.14
31U	1	12.00N	29.3	1.160	2.22
	2		30.0	1.147	2.18
	3		29.7	1.171	2.23
32T	1		29.8	1.169	2.19
	2		30.1	1.196	2.24
	3		30.0	1.190	2.19
31U	1	3.00pm	29.5	1.180	2.25
	2		30.0	1.170	2.21
	3		30.7	1.190	2.26
32T	1		30.0	1.190	2.22
	2		30.2	1.215	2.27
	3		29.7	1.215	2.23

Off Charge 4:00 p.m. 3/4/53

APPENDIX 2
Table 4.1b Discharge data, 1st cycle

Battery 1
5 March 1953

Discharge rate 300 amp			Discharge rate 200 amp			Discharge rate 100 amp		
OCV 6.18								
Min.	Sec.	Volts	Min.	Sec.	Volts	Min.	Sec.	Volts
0	5	3.68	0	18	Start	0	48	Start
0	15	3.14	0	30	3.68	1	00	4.50
0	18	3.00	0	45	3.18	1	15	4.45
			0	48	3.00	1	30	4.37
						1	45	4.26
						2	00	4.11
						2	15	4.00
						2	30	3.87
						2	45	3.68
						3	00	3.47
						3	15	3.22
						3	26	3.00
Watt hours		5.190			5.603			17.237

Battery 2
5 March 1953

OCV 6.13

0	5	4.08	0	27	Start	0	59	Start
0	15	3.63	0	30	3.90	1	00	4.60
0	27	3.00	0	45	3.54	1	15	4.60
			0	59	3.00	1	30	4.52
						1	45	4.41
						2	00	4.28
						2	15	4.16
						2	30	4.01
						2	45	3.82
						3	00	3.59
						3	15	3.20
						3	23	3.00
Watt hours		7.995			6.220			16.343

Battery 3
5 March 1953

Discharge rate 300 amp			Discharge rate 200 amp			Discharge rate 100 amp		
OCV 6.08								
Min.	Sec.	Volts	Min.	Sec.	Volts	Min.	Sec.	Volts
0	5	4.11	0	30	Start	0	52	Start
0	10	3.91	0	35	3.88	1	00	4.66
0	15	3.78	0	40	3.65	1	15	4.66
0	20	3.59	0	45	3.48	1	30	4.53
0	25	3.34	0	50	3.14	1	45	4.30
0	30	3.00	0	52	3.00	2	00	4.04
						2	15	3.69
						2	30	3.25
						2	38	3.00
Watt hours		9.175			4.310			12.053

Battery 4
5 March 1953

OCV 6.09

0	5	3.80	0	23	Start	0	51	Start
0	10	3.52	0	30	3.84	1	00	4.58
0	15	3.38	0	35	3.66	1	15	4.60
0	20	3.12	0	40	3.50	1	30	4.48
0	23	3.00	0	45	3.33	1	45	4.30
			0	51	3.00	2	00	4.07
						2	15	3.71
						2	30	3.25
						2	40	3.00
Watt hours		6.535			5.370			12.282

Table 4.1b (sheet 3)

Battery 5
5 March 1953

Discharge rate 300 amp			Discharge rate 200 amp			Discharge rate 100 amp		
OCV 6.12								
Min.	Sec.	Volts	Min.	Sec.	Volts	Min.	Sec.	Volts
0	5	3.30	0	11	Start	0	48	Start
0	10	3.05	0	15	3.84	0	55	4.49
0	11	3.00	0	20	3.78	1	00	4.51
			0	25	3.70	1	10	4.50
			0	30	3.61	1	20	4.43
			0	35	3.49	1	30	4.40
			0	40	3.38	1	40	4.31
			0	45	3.18	1	50	4.18
			0	48	3.00	2	00	4.01
						2	15	3.77
						2	30	3.37
						2	40	3.00
Watt hours		2.995			7.243			12.610

Battery 6
5 March 1953

OCV 6.10								
0	5	3.40	0	10	Start	0	46	Start
0	10	3.00	0	15	3.89	0	55	4.48
			0	20	3.78	1	00	4.50
			0	25	3.65	1	10	4.48
			0	30	3.52	1	20	4.41
			0	35	3.40	1	30	4.32
			0	40	3.28	1	40	4.23
			0	45	3.02	1	50	4.12
			0	46	3.00	2	00	3.97
						2	15	3.69
						2	30	3.23
						2	37	3.00
Watt hours		2.835			6.987			12.383

Battery 11
5 March 1953

Discharge rate 300 amp			Discharge rate 200 amp			Discharge rate 100 amp		
OCV 6.06								
Min.	Sec.	Volts	Min.	Sec.	Volts	Min.	Sec.	Volts
0	5	4.10	0	38	Start	1	10	Start
0	10	4.00	0	45	3.88	1	20	4.59
0	15	3.90	0	50	3.80	1	30	4.62
0	20	3.80	0	55	3.62	1	40	4.60
0	25	3.62	1	00	3.48	1	50	4.53
0	30	3.40	1	10	3.00	2	00	4.42
0	35	3.20				2	15	4.23
0	38	3.00				2	30	3.99
						2	45	3.69
						3	00	3.24
						3	09	3.00
Watt hours		11.325			6.223			13.480

Battery 12
5 March 1953

OCV 6.09

0	5	4.39	0	47	Start	1	10	Start
0	10	4.25	0	55	3.99	1	20	4.68
0	15	4.20	1	00	3.60	1	30	4.72
0	20	4.13	1	10	3.00	1	40	4.70
0	25	4.03				1	50	4.63
0	30	3.92				2	00	4.53
0	35	3.74				2	15	4.32
0	40	3.53				2	30	4.07
0	45	3.20				2	45	3.70
0	47	3.00				3	00	3.20
						3	07	3.00
Watt hours		15.550			4.440			13.517

Battery 13
5 March 1953

OCV 6.12

Discharge rate 300 amp			Discharge rate 200 amp			Discharge rate 100 amp		
Min.	Sec.	Volts	Min.	Sec.	Volts	Min.	Sec.	Volts
0	5	3.50	0	14	Start	0	50	Start
0	10	3.20	0	20	3.89	1	00	4.49
0	14	3.00	0	25	3.80	1	10	4.51
			0	30	3.70	1	20	4.48
			0	40	3.48	1	30	4.40
			0	45	3.27	1	40	4.31
			0	50	3.00	1	50	4.20
						2	00	4.09
						2	15	3.80
						2	30	3.41
						2	38	3.00
Watt Hours		3.950			7.060			12.183

Battery 14
5 March 1953

OCV 6.12

0	5	3.68	0	21	Start	0	54	Start
0	10	3.42	0	25	3.88	1	00	4.49
0	15	3.21	0	30	3.79	1	10	4.51
0	21	3.00	0	40	3.60	1	20	4.50
			0	45	3.39	1	30	4.42
			0	50	3.20	1	40	4.32
			0	54	3.00	1	50	4.23
						2	00	4.09
						2	15	3.80
						2	30	3.38
						2	40	3.00
Watt Hours		5.990			6.460			11.960

Battery 15
5 March 1953

	Discharge rate 300 amp			Discharge rate 200 amp			Discharge rate 100 amp		
OCV 6.12									
	Min.	Sec.	Volts	Min.	Sec.	Volts	Min.	Sec.	Volts
	0	5	4.20	0	35	Start	0	57	Start
	0	10	4.09	0	40	3.92	1	10	4.80
	0	15	3.98	0	45	3.80	1	20	4.81
	0	20	3.84	0	50	3.53	1	30	4.73
	0	25	3.70	0	55	3.20	1	40	4.61
	0	30	3.42	0	57	3.00	1	50	4.40
	0	35	3.00				2	00	4.02
							2	13	3.00
Watt Hours			11.240			4.337			9.063

Battery 16
5 March 1953

	Discharge rate 300 amp			Discharge rate 200 amp			Discharge rate 100 amp		
OCV 6.08									
	Min.	Sec.	Volts	Min.	Sec.	Volts	Min.	Sec.	Volts
	0	5	4.40	0	38	Start	0	58	Start
	0	10	4.30	0	45	3.91	1	10	4.80
	0	15	4.29	0	50	3.61	1	20	4.80
	0	20	4.08	0	55	3.20	1	30	4.75
	0	25	3.91	0	58	3.00	1	40	4.62
	0	30	3.67				1	50	4.27
	0	35	3.40				2	00	3.90
	0	38	3.00				2	10	3.00
Watt Hours			12.735			3.857			8.602

Battery 21
5 March 1953

Discharge rate 300 amp			Discharge rate 200 amp			Discharge rate 100 amp		
OCV 6.10								
Min.	Sec.	Volts	Min.	Sec.	Volts	Min.	Sec.	Volts
0	5	4.40	1	02	Start	1	34	Start
0	10	4.30	1	5	3.88	1	45	4.50
0	15	4.23	1	15	3.74	1	50	4.59
0	20	4.19	1	20	3.51	2	00	4.60
0	25	4.10	1	30	3.21	2	15	4.50
0	30	4.04	1	34	3.00	2	30	4.32
0	35	3.95				2	45	4.09
0	40	3.85				3	00	3.80
0	45	3.71				3	18	3.00
0	50	3.57						
0	55	3.40						
1	02	3.00						
Watt Hours		20.330			6.253			11.998

Battery 22
5 March 1953

Discharge rate 300 amp			Discharge rate 200 amp			Discharge rate 100 amp		
OCV 6.10								
Min.	Sec.	Volts	Min.	Sec.	Volts	Min.	Sec.	Volts
0	5	4.38	0	47	Start	1	13	Start
0	10	4.28	0	55	3.87	1	20	4.59
0	15	4.18	1	00	3.70	1	30	4.58
0	20	4.09	1	5	3.50	1	40	4.63
0	25	4.00	1	10	3.22	1	50	4.57
0	30	3.84	1	13	3.00	2	00	4.41
0	35	3.69				2	15	4.12
0	40	3.45				2	30	3.50
0	45	3.20				2	40	3.00
0	47	3.00						
Watt Hours		15.410			5.023			10.147

APPENDIX 2
Table 4.1b (sheet 8)

Battery 23
5 March 1953

	Discharge rate 300 amp			Discharge rate 200 amp			Discharge rate 100 amp		
OCV 6.05									
	Min.	Sec.	Volts	Min.	Sec.	Volts	Min.	Sec.	Volts
	0	5	4.30	0	43	Start	1	19	Start
	0	10	4.18	0	55	3.89	1	30	4.50
	0	15	4.02	1	00	3.70	1	40	4.50
	0	20	3.93	1	5	3.54	1	50	4.50
	0	25	3.78	1	10	3.41	2	00	4.47
	0	30	3.60	1	15	3.19	2	15	4.32
	0	35	3.40	1	19	3.00	2	30	4.10
	0	40	3.21				2	45	3.81
	0	43	3.00				3	00	3.29
							3	07	3.00
Watt Hours			2.445			2.078			7.343

Battery 24
5 March 1953

	Discharge rate 300 amp			Discharge rate 200 amp			Discharge rate 100 amp		
OCV 6.03									
	Min.	Sec.	Volts	Min.	Sec.	Volts	Min.	Sec.	Volts
	0	5	4.29	0	41	Start	1	12	Start
	0	10	4.15	0	50	3.81	1	20	4.58
	0	15	4.02	0	55	3.71	1	30	4.61
	0	20	3.93	1	00	3.52	1	40	4.62
	0	25	3.80	1	5	3.32	1	50	4.58
	0	30	3.61	1	10	3.10	2	00	4.49
	0	35	3.40	1	12	3.00	2	15	4.33
	0	40	3.11				2	30	4.08
	0	41	3.00				2	45	3.69
							3	00	3.14
							3	03	3.00
Watt Hours			2.343			1.782			7.707

Battery 27
5 March 1953

Discharge rate 300 amp			Discharge rate 200 amp			Discharge rate 100 amp		
OCV 6.02								
Min.	Sec.	Volts	Min.	Sec.	Volts	Min.	Sec.	Volts
0	5	4.39	0	45	Start	1	20	Start
0	10	4.28	0	50	3.91	1	30	4.48
0	15	4.17	0	55	3.81	1	40	4.53
0	20	4.07	1	00	3.71	1	50	4.51
0	25	3.92	1	5	3.52	2	00	4.48
0	30	3.73	1	10	3.40	2	15	4.36
0	35	3.53	1	15	3.20	2	30	4.18
0	40	3.30	1	20	3.00	2	45	3.97
0	45	3.00				3	00	3.60
						3	15	3.31
						3	22	3.00
Watt Hours		14.655			6.807			13.747

Battery 28
5 March 1953

Discharge rate 300 amp			Discharge rate 200 amp			Discharge rate 100 amp		
OCV 6.00								
Min.	Sec.	Volts	Min.	Sec.	Volts	Min.	Sec.	Volts
0	5	4.39	0	39	Start	1	04	Start
0	10	4.30	0	45	3.90	1	10	4.61
0	15	4.20	0	50	3.74	1	15	4.67
0	20	4.08	0	55	3.50	1	20	4.68
0	25	3.91	1	00	3.25	1	30	4.68
0	30	3.70	1	04	3.00	1	40	4.60
0	35	3.33				1	50	4.44
0	39	3.00				2	00	4.30
						2	15	3.98
						2	30	3.33
						2	37	3.00
Watt Hours		12.940			4.850			10.873

Battery 29
5 March 1953

Discharge rate 300 amp			Discharge rate 200 amp			Discharge rate 100 amp		
OCV 6.09								
Min.	Sec.	Volts	Min.	Sec.	Volts	Min.	Sec.	Volts
0	5	4.38	0	58	Start	1	38	Start
0	10	4.30	1	5	3.93	1	50	4.60
0	15	4.22	1	10	3.88	2	00	4.62
0	20	4.16	1	15	3.73	2	15	4.60
0	25	4.07	1	20	3.60	2	30	4.53
0	30	4.00	1	30	3.30	2	45	4.45
0	35	3.88	1	38	3.00	3	00	4.30
0	40	3.76				3	15	4.17
0	45	3.55				3	30	4.03
0	50	3.39				3	45	3.90
0	55	3.15				4	00	3.65
0	58	3.00				4	27	3.00
Watt Hours		19.010			7.827			19.292

Battery 30
5 March 1953

Discharge rate 300 amp			Discharge rate 200 amp			Discharge rate 100 amp		
OCV 6.08								
0	5	4.39	1	04	Start	1	50	Start
0	10	4.30	1	10	3.88	2	00	4.47
0	15	4.21	1	15	3.82	2	15	4.53
0	20	4.12	1	20	3.77	2	30	4.52
0	25	4.03	1	30	3.56	2	45	4.49
0	30	3.97	1	40	3.32	3	00	4.40
0	35	3.86	1	50	3.00	3	15	4.30
0	40	3.71				3	30	4.22
0	45	3.62				3	45	4.10
0	50	3.51				4	00	3.98
0	55	3.39				4	49	3.00
1	00	3.20						
1	04	3.00						
Watt Hours		20.580			8.980			20.288

Battery 31
5 March 1953

Discharge rate 300 amp			Discharge rate 200 amp			Discharge rate 100 amp		
OCV 6.14								
Min.	Sec.	Volts	Min.	Sec.	Volts	Min.	Sec.	Volts
0	5	3.60	0	20	Start	0	55	Start
0	10	3.42	0	25	3.88	1	00	4.55
0	15	3.22	0	30	3.80	1	5	4.53
0	20	3.00	0	35	3.70	1	10	4.55
			0	40	3.55	1	15	4.54
			0	45	3.40	1	20	4.52
			0	50	3.22	1	30	4.49
			0	55	3.00	1	40	4.40
						1	50	4.32
						2	00	4.23
						2	15	4.08
						2	30	3.87
						2	45	3.60
						3	00	3.39
						3	12	3.00
Watt Hours		5.520			6.877			15.437

Battery 32
5 March 1953

Discharge rate 300 amp			Discharge rate 200 amp			Discharge rate 100 amp		
OCV 6.18								
0	5	3.91	0	32	Start	1	5	Start
0	10	3.80	0	40	3.70	1	10	4.49
0	15	3.62	0	45	3.60	1	15	4.52
0	20	3.48	0	50	3.50	1	20	4.51
0	25	3.30	0	55	3.33	1	30	4.49
0	30	3.10	1	00	3.16	1	40	4.42
0	32	3.00	1	5	3.00	1	50	4.38
						2	00	4.28
						2	15	4.14
						2	30	4.00
						2	45	3.85
						3	00	3.69
						3	15	3.40
						3	30	3.03
						3	32	3.00
Watt Hours		9.395			6.197			16.365

Table 4.2a. Charging data for June 1952 test batteries after 8 months storage.

Cycle 2: Charged for 17 hours at 5 amperes

TRAY Number 1

On Charge 3:07 p.m. 3/5/53

Battery	Cell	Starting Time	Temperature	Specific Gravity	Volts
1T	1	5Mar.	28.2	1.194	
	2	2:35 pm	29.0	1.198	
	3		29.5	1.173	
2T	1		29.9	1.172	
	2		29.4	1.179	
	3		28.2	1.183	
		6 Mar.			
1 T	1	12:35 am	30.3	1.255	
	2		31.1	1.260	
	3		31.0	1.250	
2 T	1		31.5	1.250	
	2		31.3	1.255	
	3		30.1	1.262	
1 T	1	6:10 am	32.8	1.275	2.33
	2		33.4	1.290	2.34
	3		34.0	1.265	2.34
2 T	1		34.2	1.265	2.33
	2		33.7	1.275	2.31
	3		32.8	1.280	2.33
1 T	1	8:00 am	31.0	1.284	
	2		31.8	1.294	
	3		32.8	1.270	
2 T	1		32.9	1.267	
	2		32.3	1.278	
	3		31.4	1.283	

Off Charge 8:00 a.m. 3/6/53

Table 4.2a Continued (sheet 2)

TRAY Number 2
On Charge 3:07 p.m. 3/5/53

Battery	Cell	Starting Time	Temperature	Specific Gravity	Volts
3U	1	5Mar.	28.8	1.158	
	2	2:35 pm	28.8	1.151	
	3		28.9	1.151	
4U	1		29.2	1.163	
	2		28.8	1.163	
	3		28.4	1.158	
		6 Mar.			
3U	1	12:35 am	30.2	1.230	
	2		30.3	1.225	
	3		30.9	1.215	
4U	1		30.6	1.230	
	2		30.6	1.225	
	3		30.6	1.225	
3U	1	6:10 am	32.8	1.250	2.32
	2		34.0	1.250	2.29
	3		33.8	1.245	2.30
4U	1		34.0	1.260	2.31
	2		34.0	1.255	2.30
	3		33.0	1.255	2.32
3U	1	8:00 am	31.2	1.253	
	2		32.6	1.252	
	3		32.4	1.242	
4U	1		32.3	1.253	
	2		32.6	1.250	
	3		31.3	1.252	

Off Charge 8:00 a.m. 3/6/53

Table 4.2a Continued (sheet 3)

TRAY Number 3

On Charge 3:07 p.m. 3/5/53

Battery	Cell	Starting Time	Temperature	Specific Gravity	Volts
5U	1	5Mar.	28.9	1.173	
	2	2:35 pm	28.5	1.178	
	3		28.7	1.165	
6U	1		28.9	1.167	
	2		28.1	1.162	
	3		27.5	1.164	
		6 Mar.			
5U	1	12:35 am	30.2	1.240	
	2		30.8	1.240	
	3		31.1	1.233	
6U	1		30.3	1.235	
	2		30.2	1.235	
	3		29.8	1.238	
5U	1	6.00 am	33.2	1.260	2.34
	2		34.4	1.265	2.33
	3		34.1	1.260	2.32
6U	1		33.7	1.265	2.33
	2		33.6	1.260	2.33
	3		32.0	1.265	2.34
5U	1	8:00 am	31.4	1.260	
	2		31.6	1.262	
	3		32.2	1.256	
6U	1		31.9	1.258	
	2		31.9	1.260	
	3		30.2	1.257	

Off Charge 8:00 a.m. 3/6/53

Table 4.2a Continued (sheet 4)

TRAY Number 6

On Charge 3:07 p.m. 3/5/53

Battery	Cell	Starting Time	Temperature	Specific Gravity	Volts
11T	1	5 Mar. 2:35 pm	28.5	1.154	
	2		28.7	1.160	
	3		28.4	1.149	
12T	1		28.9	1.156	
	2		28.8	1.162	
	3		28.0	1.164	
11T	1	6 Mar. 12:35 am	30.4	1.220	
	2		30.3	1.228	
	3		30.7	1.220	
12T	1		30.8	1.230	
	2		30.0	1.233	
	3		30.0	1.233	
11T	1	6:00 am	33.0	1.245	2.30
	2		33.3	1.255	2.29
	3		33.8	1.245	2.29
12T	1		34.0	1.250	2.29
	2		33.3	1.255	2.29
	3		32.5	1.260	2.31
11T	1	8:00 am	31.2	1.252	
	2		32.6	1.260	
	3		32.1	1.249	
12T	1		32.1	1.260	
	2		31.6	1.260	
	3		30.8	1.260	

Off Charge 8:00 a.m. 3/6/53

Table 4.2a Continued (sheet 5)

TRAY Number 7

On Charge 3:07 3/5/53

Battery	Cell	Starting Time	Temperature	Specific Gravity	Volts
13T	1	5 Mar	28.9	1.169	
	2	2:45 pm	29.1	1.178	
	3		28.9	1.180	
14T	1		29.7	1.176	
	2		29.6	1.177	
	3		28.9	1.173	
		6 Mar.			
13T	1	12:35 am	33.0	1.252	
	2		32.3	1.245	
	3		32.2	1.250	
14T	1		32.0	1.245	
	2		31.4	1.245	
	3		31.2	1.250	
13T	1	6.00 am	35.0	1.265	2.31
	2		35.0	1.265	2.31
	3		35.2	1.275	2.31
14T	1		35.2	1.270	2.31
	2		34.4	1.270	2.32
	3		33.6	1.275	2.33
13T	1	8:00 am	32.2	1.268	
	2		33.3	1.270	
	3		33.4	1.275	
14T	1		33.0	1.270	
	2		33.0	1.271	
	3		32.0	1.276	

Off Charge 8:00 a.m. 3/6/53

Table 4.2a Continued (Sheet 6)

TRAY Number 8

On Charge 3:07 p.m. 3/5/53

Battery	Cell	Starting Time	Temperature	Specific Gravity	Volts
15U	1	5 Mar.	29.0	1.194	
	2	2.45pm	29.0	1.152	
	3		29.0	1.144	
16U	1		29.5	1.144	
	2		28.9	1.142	
	3		28.5	1.143	
		6 Mar.			
15U	1	12:35am	31.0	1.263	
	2		31.6	1.225	
	3		32.0	1.220	
16U	1		31.6	1.215	
	2		31.7	1.215	
	3		31.2	1.215	
15U	1	6:00 am	33.4	1.285	2.35
	2		35.0	1.250	2.29
	3		34.8	1.245	2.29
16U	1		34.4	1.235	2.27
	2		34.7	1.240	2.29
	3		32.8	1.240	2.29
15U	1	8:00 am	31.9	1.281	
	2		32.5	1.249	
	3		33.0	1.241	
16U	1		32.4	1.235	
	2		32.0	1.240	
	3		31.2	1.240	

Off Charge 8:00 a.m. 3/6/53

Table 4.2a Continued (sheet 7)

TRAY Number 11

On Charge 3:07 p.m. 3/5/53

Battery	Cell	Starting Time	Temperature	Specific Gravity	Volts
21T	1	5 Mar. 2:45 pm	29.3	1.165	
	2		30.0	1.165	
	3		30.1	1.161	
22 M*	1		30.2	1.157	
	2		30.0	1.162	
	3		29.0	1.158	
21T	1	6 Mar. 12:35 am	30.2	1.232	
	2		30.4	1.235	
	3		31.0	1.230	
22 M*	1		31.5	1.232	
	2		31.1	1.238	
	3		31.0	1.235	
21T	1	6:00 am	31.8	1.270	2.31
	2		33.0	1.275	2.29
	3		34.0	1.270	2.29
22 M*	1		34.1	1.255	2.28
	2		34.0	1.265	2.29
	3		33.3	1.260	2.29
21T	1	8:00 am	30.1	1.273	
	2		31.7	1.275	
	3		32.3	1.270	
22 M*	1		32.2	1.260	
	2		32.3	1.270	
	3		31.5	1.260	

M* = $MgSO_4$-Na_2SO_4

Off Charge 8:00 a.m. 3/6/53

Table 4.2a Continued (sheet 8)

TRAY Number 12

On Charge 3:07 p.m. 3/5/53

Battery	Cell	Starting Time	Temperature	Specific Gravity	Volts
23T	1	5 Mar.	30.0	1.143	
	2	2:50pm	30.2	1.155	
	3		29.8	1.148	
24U	1		30.2	1.135	
	2		29.6	1.134	
	3		29.2	1.135	
		6 Mar.			
23T	1	12:35 am	30.0	1.233	
	2		30.0	1.235	
	3		30.2	1.228	
24U	1		30.6	1.213	
	2		30.0	1.210	
	3		29.4	1.215	
23T	1	6.00 am	30.8	1.265	2.27
	2		31.0	1.275	2.28
	3		31.5	1.275	2.27
24U	1		31.0	1.260	2.25
	2		31.0	1.260	2.25
	3		35.0	1.265	2.27
23T	1	8:00am	29.9	1.275	
	2		30.5	1.285	
	3		30.8	1.281	
24U	1		30.3	1.260	
	2		30.0	1.260	
	3		29.8	1.261	

Off Charge 8:00 a.m. 3/6/53

Table 4.2a Continued (sheet 9)

TRAY Number 14

On Charge 3:07 p.m. 3/5/53

Battery	Cell	Starting Time	Temperature	Specific Gravity	Volts
27T	1	5 Mar.	29.8	1.134	
	2	2:50 pm	30.0	1.145	
	3		29.1	1.140	
28U	1		29.3	1.130	
	2		28.6	1.127	
	3		28.2	1.123	
27T	1	6 Mar. 12:35 am	29.7	1.212	
	2		29.7	1.230	
	3		29.9	1.220	
28U	1		30.0	1.205	
	2		29.3	1.203	
	3		28.7	1.200	
27T	1	6:00 am	31.0	1.250	2.28
	2		31.4	1.260	2.29
	3		31.8	1.260	2.27
28U	1		31.0	1.250	2.27
	2		30.7	1.245	2.25
	3		29.4	1.240	2.26
27T	1	8:00 am	29.8	1.258	
	2		30.5	1.268	
	3		30.8	1.262	
29U	1		30.0	1.248	
	2		29.8	1.244	
	3		29.0	1.238	

Off Charge 8:00 a.m. 3/6/53

Table 4.2a Continued (sheet 10)

TRAY Number 15 On Charge 3:07 p.m. 3/5/53

Battery	Cell	Starting Time	Temperature	Specific Gravity	Volts
29U	1	5 Mar	30.6	1.135	
	2	2:50 pm	30.2	1.143	
	3		30.4	1.135	
30T	1		30.9	1.152	
	2		31.7	1.152	
	3		30.2	1.150	
29U	1	6 Mar	29.9	1.195	
	2	12:35am	30.0	1.217	
	3		30.3	1.200	
30T	1		30.2	1.228	
	2		29.8	1.233	
	3		30.0	1.222	
29U	1	6:00 am	30.0	1.250	2.27
	2		31.0	1.260	2.29
	3		31.0	1.250	2.27
30T	1		31.4	1.275	2.31
	2		31.0	1.275	2.28
	3		31.0	1.275	2.31
29U	1	8:00 am	29.0	1.246	
	2		30.0	1.258	
	3		30.8	1.250	
30T	1		30.9	1.278	
	2		30.8	1.275	
	3		30.0	1.276	

Off Charge 8:00 a.m. 3/6/53

Table 4.2a Continued (sheet 11)

TRAY Number 16

On Charge 3:07 p.m. 3/5/53

Battery	Cell	Starting Time	Temperature	Specific Gravity	Volts
31U	1	5 Mar	30.2	1.172	
	2	2:50pm	30.3	1.164	
	3		31.1	1.178	
32T	1		31.2	1.177	
	2		32.2	1.190	
	3		30.1	1.196	
31U	1	6 Mar	32.2	1.228	
	2	12:35am	33.2	1.228	
	3		29.0	1.235	
32T	1		29.2	1.245	
	2		29.2	1.250	
	3		28.7	1.258	
31U	1	6:00 am	34.0	1.245	2.33
	2		35.5	1.245	2.31
	3		35.5	1.255	2.33
32T	1		36.0	1.265	2.30
	2		35.7	1.265	2.33
	3		34.6	1.275	2.33
31U	1	8:00 am	31.9	1.244	
	2		33.0	1.245	
	3		33.9	1.254	
32T	1		33.9	1.265	
	2		33.1	1.268	
	3		32.0	1.280	

Off Charge 8:00 a.m. 3/6/53

APPENDIX 2
Table 4.2b Discharge data, 2nd cycle

Battery 1
6 March 1953

Discharge rate 300 amp			Discharge rate 200 amp			Discharge rate 100 amp		
OCV 6.40								
Min.	Sec.	Volts	Min.	Sec.	Volts	Min.	Sec.	Volts
0	5	4.25	1	46	Start	5	03	Start
0	10	4.15	2	00	4.03	5	10	4.50
0	15	4.10	2	10	4.03	5	30	4.55
0	20	4.07	2	20	4.03	5	45	4.50
0	25	4.02	2	30	3.95	6	00	4.52
0	30	3.96	2	40	3.94	6	15	4.50
0	35	3.90	2	45	3.90	6	30	4.43
0	40	3.85	2	50	3.90	6	45	4.41
0	45	3.80	3	00	3.85	7	00	4.39
0	50	3.75	3	15	3.80	7	15	4.30
0	55	3.68	3	30	3.70	7	30	4.23
1	00	3.60	3	45	3.60	7	45	4.12
1	5	3.53	4	00	3.53	8	00	4.04
1	10	3.50	4	15	3.42	8	15	3.98
1	15	3.43	4	30	3.30	8	30	3.83
1	20	3.38	4	45	3.18	8	45	3.74
1	25	3.30	5	00	3.02	9	00	3.64
1	30	3.23	5	03	3.00	9	15	3.51
1	35	3.20				9	30	3.41
1	40	3.12				9	45	3.30
1	45	3.05				10	00	3.18
1	46	3.00				10	15	3.05
						10	22	3.00
Watt hours		32.555			39.783			33.428

APPENDIX 2
Table 4.2b (sheet 2)

Battery 2
6 March 1953

Discharge rate 300 amp			Discharge rate 200 amp			Discharge rate 100 amp		
OCV 6.35								
Min.	Sec.	Volts	Min.	Sec.	Volts	Min.	Sec.	Volts
0	05	4.40	2	37	Start	5	28	Start
0	10	4.33	2	40	4.02	5	30	4.48
0	20	4.25	2	50	4.08	5	40	4.55
0	30	4.20	3	00	4.06	5	50	4.58
0	40	4.12	3	10	4.04	6	00	4.60
0	50	4.04	3	20	4.00	6	15	4.58
1	00	3.98	3	30	3.98	6	30	4.53
1	10	3.90	3	40	3.92	6	45	4.49
1	20	3.80	3	50	3.89	7	00	4.45
1	30	3.70	4	00	3.82	7	15	4.38
1	40	3.58	4	10	3.78	7	30	4.28
1	50	3.47	4	20	3.72	7	45	4.13
2	00	3.37	4	30	3.67	8	00	4.00
2	10	3.28	4	40	3.59	8	15	3.82
2	20	3.18	4	50	3.48	8	30	3.62
2	30	3.08	5	00	3.35	8	45	3.42
2	37	3.00	5	10	3.28	9	00	3.20
			5	20	3.12	9	10	3.09
			5	28	3.00	9	15	3.00
Watt hours		49.250			35.440			25.975

APPENDIX 2
Table 4.2b (sheet 3)

Battery 3
6 March 1953

OCV 6.32

Discharge rate 300 amp			Discharge rate 200 amp			Discharge rate 100 amp		
Min.	Sec.	Volts	Min.	Sec.	Volts	Min.	Sec.	Volts
0	4	4.50	2	54	Start	5	16	Start
0	5	4.48	3	00	4.08	5	20	4.40
0	15	4.40	3	10	4.12	5	30	4.68
0	20	4.38	3	20	4.10	5	40	4.70
0	30	4.32	3	30	4.09	5	50	4.72
0	40	4.28	3	40	4.03	6	00	4.75
0	50	4.22	3	50	4.00	6	15	4.75
1	00	4.18	4	00	3.92	6	30	4.72
1	10	4.13	4	10	3.82	6	45	4.70
1	20	4.08	4	20	3.73	7	00	4.64
1	30	4.00	4	30	3.64	7	15	4.55
1	40	3.92	4	40	3.55	7	30	4.44
1	50	3.84	4	50	3.48	7	45	4.33
2	00	3.75	5	00	3.33	8	00	4.18
2	10	3.66	5	10	3.17	8	15	4.04
2	20	3.52	5	16	3.00	8	30	3.83
2	30	3.38				8	45	3.62
2	40	3.22				9	00	3.28
2	50	3.02				9	12	3.00
2	54	3.00						
Watt hours		56.840			29.696			28.270

APPENDIX 2
Table 4.2b (sheet 4)

Battery 4
6 March 1953

Discharge rate 300 amp			Discharge rate 200 amp			Discharge rate 100 amp		
OCV 6.33								
Min.	Sec.	Volts	Min.	Sec.	Volts	Min.	Sec.	Volts
0	5	4.23	2	27	Start	5	06	Start
0	10	4.14	2	30	4.00			
0	20	4.08	2	40	4.04	5	10	-- --
0	30	4.04	2	50	4.03	5	20	4.58
0	40	4.00	3	00	4.02	5	30	4.64
0	50	3.93	3	10	4.00	5	40	4.70
1	00	3.88	3	20	3.95	5	50	4.74
1	10	3.80	3	30	3.91	6	00	4.70
1	20	3.72	3	40	3.86	6	15	4.70
1	30	3.65	3	50	3.80	6	30	4.68
1	40	3.58	4	00	3.61	6	45	4.66
1	50	3.48	4	10	3.65	7	00	4.62
2	00	3.40	4	20	3.52	7	15	4.60
2	10	3.26	4	30	3.42	7	30	4.55
2	20	3.12	4	40	3.32	7	45	4.48
2	27	3.00	4	50	3.20	8	00	4.40
			5	00	3.07	8	15	4.30
			5	06	3.00	8	30	4.18
						8	45	4.00
						9	00	3.88
						9	10	-- --
						9	15	3.68
						9	30	3.42
						9	45	3.12
						9	49	3.00
Watt hours		45.705			32.616			33.717

APPENDIX 2
Table 4.2b (sheet 5)

Battery 5
6 March 1953

Discharge rate 300 amp			Discharge rate 200 amp			Discharge rate 100 amp		
OCV 6.33								
Min.	Sec.	Volts	Min.	Sec.	Volts	Min.	Sec.	Volts
0	5	4.10	2	09	Start	4	46	Start
0	10	3.98	2	10	- -	4	50	4.50
0	20	3.90	2	20	4.00	5	00	4.60
0	30	3.82	2	30	4.00	5	10	- -
0	40	3.75	2	40	3.98	5	20	4.68
0	50	3.69	2	50	3.95	5	30	4.68
1	00	3.62	3	00	3.91	5	40	4.67
1	10	3.55	3	10	3.88	5	50	4.65
1	20	3.48	3	20	3.82	6	00	4.65
1	30	3.40	3	30	3.78	6	15	4.64
1	40	3.30	3	40	3.70	6	30	4.62
1	50	3.22	3	50	3.63	6	45	4.58
2	00	3.10	4	00	3.54	7	00	4.53
2	09	3.00	4	10	3.47	7	15	4.48
			4	20	3.35	7	30	4.42
			4	30	3.22	7	45	4.31
			4	40	3.08	8	00	4.22
			4	46	3.00	8	15	4.08
						8	30	3.90
						8	45	3.70
						9	00	3.53
						9	15	3.30
						9	27	3.00
Watt hours		38.430			31.930			33.403

APPENDIX 2
Table 4.2b (sheet 6)

Battery 6
6 March 1953

Discharge rate 300 amp			Discharge rate 200 amp			Discharge rate 100 amp		
CCV 6.34								
Min.	Sec.	Volts	Min.	Sec.	Volts	Min.	Sec.	Volts
0	5	4.10	2	10	Start	4	50	Start
0	10	3.98	2	20	4.00	5	00	4.50
0	20	3.89	2	30	4.02	5	10	4.64
0	30	3.82	2	40	4.00	5	20	4.68
0	40	3.74	2	50	3.98	5	30	4.68
0	50	3.70	3	00	3.94	5	40	4.68
1	00	3.62	3	10	3.90	5	50	4.68
1	10	3.58	3	20	3.86	6	00	4.67
1	20	3.50	3	30	3.80	6	15	4.64
1	30	3.41	3	40	3.72	6	30	4.62
1	40	3.32	3	50	3.68	6	45	4.58
1	50	3.22	4	00	3.60	7	00	4.52
2	00	3.14	4	10	3.50	7	15	4.48
2	10	3.00	4	20	3.40	7	30	4.40
			4	30	3.28	7	45	4.32
			4	40	3.14	8	00	4.22
			4	50	3.00	8	15	4.10
						8	30	3.96
						8	45	3.78
						9	00	3.58
						9	15	3.30
						9	25	3.00
Watt hours		38.775			32.690			32.687

APPENDIX 2
Table 4.2b (sheet 7)

Battery 11
6 March 1953

Discharge rate 300 amp			Discharge rate 200 amp			Discharge rate 100 amp		
OCV 6.28								
Min.	Sec.	Volts	Min.	Sec.	Volts	Min.	Sec.	Volts
0	5	4.50	0	17	Start	5	20	Start
0	10	4.42	3	20	3.95	5	30	4.50
0	20	4.42	3	30	4.02	5	40	4.60
0	30	4.37	3	40	4.01	5	50	4.62
0	40	4.32	3	50	4.00	6	00	4.65
0	50	4.28	4	00	3.92	6	15	4.68
1	00	4.22	4	10	3.90	6	30	4.67
1	10	4.18	4	20	3.80	6	45	4.63
1	20	4.12	4	30	3.72	7	00	4.60
1	30	4.07	4	40	3.62	7	15	4.53
1	40	4.00	4	50	3.52	7	30	4.43
1	50	3.92	5	00	3.42	7	45	4.31
2	00	3.88	5	10	3.28	8	00	4.20
2	10	3.80	5	20	3.00	8	15	4.09
2	20	3.72				8	30	3.95
2	30	3.62				8	45	3.78
2	40	3.50				9	00	3.50
2	50	3.40				9	15	3.24
3	00	3.29				9	28	3.00
3	10	3.12						
3	17	3.00						
Watt hours		64.620			25.440			29.063

APPENDIX 2
Table 4.2b (sheet 8)

Battery 12
6 March 1953

Discharge rate 300 amp			Discharge rate 200 amp			Discharge rate 100 amp		
OCV 6.30								
Min.	Sec.	Volts	Min.	Sec.	Volts	Min.	Sec.	Volts
0	5	4.70	3	21	Start	5	23	Start
0	10	4.67	3	30	4.02	5	30	4.41
0	20	4.62	3	40	4.05	5	40	4.53
0	30	4.60	3	50	4.03	5	50	4.60
0	40	4.55	4	00	4.00	6	00	4.63
0	50	4.50	4	10	3.92	6	15	4.68
1	00	4.48	4	20	3.81	6	30	4.65
1	10	4.42	4	30	3.69	6	45	4.62
1	20	4.38	4	40	3.59	7	00	4.59
1	30	4.32	4	50	3.48	7	15	4.50
1	40	4.28	5	00	3.38	7	30	4.38
1	50	4.20	5	10	3.25	7	45	4.20
2	00	4.14	5	20	3.09	8	00	4.09
2	10	4.08	5	23	3.00	8	15	3.98
2	20	4.00				8	30	3.88
2	30	3.90				8	45	3.74
2	40	3.78				9	00	3.58
2	50	3.62				9	15	3.52
3	00	3.44				9	30	3.47
3	10	3.26				9	45	3.33
3	20	3.02				9	56	3.00
3	21	3.00						
Watt hours		69.525			24.913			31.260

Battery 13
6 March 1953

Discharge rate 300 amp			Discharge rate 200 amp			Discharge rate 100 amp		
OCV 6.31								
Min.	Sec.	Volts	Min.	Sec.	Volts	Min.	Sec.	Volts
0	5	4.25	2	30	Start	4	49	Start
0	10	4.15	2	40	3.98	5	00	4.52
0	20	4.04	2	50	4.01	5	10	4.60
0	30	3.98	3	00	3.98	5	20	4.62
0	40	3.92	3	10	3.93	5	30	4.62
0	50	3.86	3	20	3.90	5	40	4.62
1	00	3.80	3	30	3.86	5	50	4.62
1	10	3.72	3	40	3.79	6	00	4.61
1	20	3.68	3	50	3.71	6	15	4.60
1	30	3.60	4	00	3.63	6	30	4.56
1	40	3.52	4	10	3.53	6	45	4.51
1	50	3.42	4	20	3.42	7	00	4.46
2	00	3.38	4	30	3.30	7	15	4.39
2	10	3.24	4	40	3.17	7	30	4.29
2	20	3.12	4	49	3.00	7	45	4.12
2	30	3.00				8	00	4.00
						8	15	3.82
						8	30	3.60
						8	45	3.22
						8	52	3.00
Watt hours		45.935			28.290			28.717

APPENDIX 2
Table 4.2b (sheet 10)

Battery 14
6 March 1953

OCV 6.32

Discharge rate 300 amp			Discharge rate 200 amp			Discharge rate 100 amp		
Min.	Sec.	Volts	Min.	Sec.	Volts	Min.	Sec.	Volts
0	5	4.32	2	39	Start	5	00	Start
0	10	4.22	2	45	4.00	5	10	4.52
0	20	4.16	3	00	4.00	5	20	4.60
0	30	4.10	3	10	4.00	5	30	4.62
0	40	4.03	3	20	3.96	5	40	4.62
0	50	3.99	3	30	3.91	5	50	4.62
1	00	3.92	3	40	3.88	6	00	4.62
1	10	3.88	3	50	3.80	6	15	4.62
1	20	3.79	4	00	3.72	6	30	4.60
1	30	3.71	4	10	3.64	6	45	4.56
1	40	3.62	4	20	3.56	7	00	4.50
1	50	3.58	4	30	3.46	7	15	4.42
2	00	3.46	4	40	3.31	7	30	4.32
2	10	3.38	4	50	3.20	7	45	4.22
2	20	3.26	5	00	3.00	8	00	4.12
2	30	3.12				8	15	3.98
2	39	3.00				8	30	3.78
						8	45	3.53
						9	00	3.29
						9	10	3.00
Watt hours		49.665			28.913			29.465

Battery 15
6 March 1953

OCV 6.32

Discharge rate 300 amp			Discharge rate 200 amp			Discharge rate 100 amp		
Min.	Sec.	Volts	Min.	Sec.	Volts	Min.	Sec.	Volts
0	5	4.61	3	26	Start	4	40	Start
0	10	4.55	3	30	4.03	4	50	4.70
0	20	4.50	3	40	4.08	5	00	4.85
0	30	4.44	3	50	4.06	5	10	4.90
0	40	4.40	4	00	4.00	5	20	4.90
0	50	4.36	4	10	3.88	5	30	4.90
1	00	4.30	4	20	3.68	5	40	4.90
1	10	4.28	4	30	3.44	5	50	4.90
1	20	4.22	4	40	3.00	6	00	4.90
1	30	4.20				6	15	4.86
1	40	4.15				6	30	4.82
1	50	4.10				6	45	4.77
2	00	4.07				7	00	4.69
2	10	4.00				7	15	4.50
2	20	3.95				7	30	4.30
2	30	3.90				7	45	4.10
2	40	3.82				8	00	3.65
2	50	3.72				8	05	3.30
3	00	3.60				8	13	3.00
3	10	3.43						
3	20	3.19						
3	26	3.00						
Watt hours		69.820			15.587			26.965

Battery 16
6 March 1953

OCV 6.28

Discharge rate 300 amp			Discharge rate 200 amp			Discharge rate 100 amp		
Min.	Sec.	Volts	Min.	Sec.	Volts	Min.	Sec.	Volts
0	5	4.73	3	25	Start	4	27	Start
0	10	4.70	3	30	4.06	4	30	4.58
0	20	4.63	3	40	4.10	4	40	4.80
0	30	4.61	3	50	4.05	4	50	4.90
0	40	4.58	4	00	3.90	5	00	4.95
0	50	4.52	4	10	3.68	5	10	4.95
1	00	4.49	4	20	3.42	5	20	4.95
1	10	4.47	4	27	3.00	4	30	4.95
1	20	4.42				5	40	4.94
1	30	4.38				5	50	4.93
1	40	4.33				6	00	4.90
1	50	4.30				6	15	4.90
2	00	4.25				6	30	4.83
2	10	4.21				6	45	4.78
2	20	4.15				7	00	4.62
2	30	4.08				7	15	4.45
2	40	3.98				7	30	4.24
2	50	3.90				7	45	4.00
3	00	3.74				7	50	3.75
3	10	3.54				7	55	3.40
3	20	3.20				8	00	3.15
3	25	3.00				8	03	3.00
Watt hours		72.240			13.043			27.760

APPENDIX 2
Table 4.2b (sheet 13)

Battery 21
6 March 1953

Discharge rate 300 amp			Discharge rate 200 amp			Discharge rate 100 amp		
OCV 6.32								
Min.	Sec.	Volts	Min.	Sec.	Volts	Min.	Sec.	Volts
0	5	4.70	4	15	Start	5	22	Start
0	10	4.67	4	20	3.90	5	30	4.56
0	20	4.63	4	30	3.92	5	40	4.62
0	30	4.60	4	40	3.88	5	50	4.70
0	45	4.54	4	50	3.70	6	00	4.70
0	50	4.51	5	00	3.60	6	15	4.70
1	00	4.49	5	10	3.42	6	30	4.68
1	10	4.44	5	20	3.10	6	45	4.62
1	20	4.42	5	22	3.00	7	00	4.47
1	30	4.38				7	15	4.35
1	40	4.34				7	30	4.20
1	50	4.30				7	45	4.05
2	00	4.28				8	03	3.55
2	10	4.23				8	05	3.35
2	20	4.18				8	10	3.20
2	30	4.13				8	15	3.15
2	40	4.10				8	20	3.05
2	50	4.04				8	25	3.00
3	00	3.99						
3	10	3.90						
3	20	3.85						
3	30	3.76						
3	40	3.65						
3	50	3.50						
4	00	3.33						
4	10	3.12						
4	15	3.00						
Watt hours		88.130			13.543			21.640

APPENDIX 2
Table 4.2b (sheet 14)

Battery 22
6 March 1953

CCV 6.30

Discharge rate 300 amp			Discharge rate 200 amp			Discharge rate 100 amp		
Min.	Sec.	Volts	Min.	Sec.	Volts	Min.	Sec.	Volts
0	5	4.70	3	37	Start	4	45	Start
0	10	4.65	3	40	3.91	4	50	4.50
0	20	4.60	3	50	4.00	5	00	4.62
0	30	4.57	4	00	3.93	5	10	4.70
0	40	4.51	4	10	3.82	5	20	4.72
0	50	4.45	4	20	3.60	5	30	4.73
1	00	4.42	4	30	3.45	5	40	4.72
1	10	4.39	4	40	3.22	5	50	4.72
1	20	4.32	4	45	3.00	6	00	4.70
1	30	4.30				6	15	4.64
1	40	4.25				6	30	4.52
1	50	4.22				6	45	4.35
2	00	4.18				7	00	4.20
2	10	4.12				7	15	4.08
2	20	4.05				7	30	3.82
2	30	4.00				7	40	3.30
2	40	3.92				7	45	3.00
2	50	3.83						
3	00	3.73						
3	10	3.62						
3	20	3.42						
3	30	3.20						
3	37	3.00						
Watt hours		74.740			13.897			21.927

APPENDIX 2
Table 4.2b (sheet 15)

Battery 23
6 March 1953

Discharge rate 300 amp			Discharge rate 200 amp			Discharge rate 100 amp		
OCV 6.37								
Min.	Sec.	Volts	Min.	Sec.	Volts	Min.	Sec.	Volts
0	5	4.70	4	12	Start	5	49	Start
0	10	4.60	4	20	3.92	6	00	4.52
0	20	4.55	4	30	3.95	6	15	4.62
0	30	4.50	4	40	3.90	6	30	4.62
0	40	4.45	4	50	3.88	6	45	4.65
0	50	4.40	5	00	3.78	7	00	4.62
1	00	4.38	5	10	3.68	7	15	4.60
1	10	4.32	5	20	3.55	7	30	4.52
1	20	4.30	5	30	3.32	7	45	4.45
1	30	4.24	5	40	3.25	8	00	4.38
1	40	4.20	5	45	3.10	8	15	4.30
1	50	4.18	5	49	3.00	8	30	4.20
2	00	4.13				8	45	4.10
2	10	4.10				9	00	4.00
2	20	4.03				9	15	3.82
2	30	4.00				9	30	3.62
2	40	3.95				9	40	3.50
2	50	3.90				9	50	3.35
3	00	3.85				10	00	3.22
3	10	3.78				10	10	3.10
3	20	3.70				10	14	3.00
3	30	3.60						
3	40	3.50						
3	50	3.40						
4	00	3.22						
4	10	3.03						
4	12	3.00						
Watt hours		84.820			19.567			30.632

APPENDIX 2
Table 4.2b (sheet 16)

Battery 24
6 March 1953

Discharge rate 300 amp			Discharge rate 200 amp			Discharge rate 100 amp		
OCV 6.35								
Min.	Sec.	Volts	Min.	Sec.	Volts	Min.	Sec.	Volts
0	5	4.65	4	13	Start	5	57	Start
0	10	4.62	4	20	4.02	6	00	4.50
0	20	4.59	4	30	4.02	6	15	4.68
0	30	4.53	4	40	4.02	6	30	4.72
0	40	4.50	4	50	3.95	6	45	4.73
0	50	4.44	5	00	3.90	7	00	4.75
1	00	4.42	5	10	3.80	7	15	4.72
1	10	4.38	5	20	3.70	7	30	4.70
1	20	4.35	5	30	3.60	7	45	4.62
1	30	4.32	5	40	3.40	8	00	4.58
1	40	4.28	5	50	3.20	8	15	4.50
1	50	4.23	5	55	3.05	8	30	4.45
2	00	4.20	5	57	3.00			
2	10	4.15				8	45	4.38
2	20	4.11				9	00	4.30
2	30	4.05				9	15	4.13
2	40	4.00				9	30	3.82
2	50	3.96				9	35	3.72
3	00	3.90				9	40	3.60
3	10	3.82				9	45	3.55
3	20	3.74				9	50	3.40
3	30	3.67				9	55	3.32
3	40	3.53				10	00	3.22
3	50	3.42				10	5	3.18
4	00	3.28				10	10	3.10
4	10	3.10				10	15	3.02
4	13	3.00				10	17	3.00
Watt hours		86.095			21.463			31.160

APPENDIX 2
Table 4.2b (sheet 17)

Battery 27
6 March 1953

	Discharge rate 300 amp		Discharge rate 200 amp		Discharge rate 100 amp	
OCV	6.30					
Min.	Sec.	Volts	Min.	Sec.	Min.	Sec.	Volts
0	5	4.72	4	13	Start	5	53	Start
0	10	4.70	4	20	3.97	6	00	4.42
0	20	4.68	4	30	4.00	6	15	4.60
0	30	4.61	4	40	3.95	6	30	4.62
0	40	4.58	4	50	3.92	6	45	4.65
0	50	4.50	5	00	3.82	7	00	4.63
1	00	4.48	5	10	3.72	7	15	4.62
1	10	4.43	5	20	3.58	7	30	4.60
1	20	4.40	5	30	3.42	7	45	4.50
1	30	4.35	5	40	3.26	8	00	4.40
1	40	4.30	5	50	3.07	8	15	4.20
1	50	4.28	5	53	3.00	8	30	4.03
2	00	4.22				8	45	3.92
2	10	4.18				9	00	3.78
2	20	4.12				9	10	3.50
2	30	4.10				9	20	3.15
2	40	4.03				9	27	3.00
2	50	3.98						
3	00	3.92						
3	10	3.82						
3	20	3.74						
3	30	3.66						
3	40	3.54						
3	50	3.42						
4	00	3.25						
4	10	3.07						
4	13	3.00						
Watt hours		86.660		20.318			25.308	

Battery 28
6 March 1953

Discharge rate 300 amp			Discharge rate 200 amp			Discharge rate 100 amp		
OCV 6.30								
Min.	Sec.	Volts	Min.	Sec.	Volts	Min.	Sec.	Volts
0	5	4.78	4	31	Start	5	39	Start
0	10	4.72	4	37	4.00	5	47	4.62
0	20	4.70	4	47	4.00	5	57	4.72
0	30	4.65	4	57	3.92	6	07	4.80
0	40	4.60	5	07	3.78	6	17	4.81
0	50	4.58	5	17	3.65	6	27	4.82
1	00	4.52	5	27	3.48	6	37	4.82
1	10	4.50	5	39	3.00	6	47	4.82
1	20	4.46				6	57	4.80
1	30	4.40				7	07	4.78
1	40	4.37				7	17	4.70
1	50	4.32				7	27	4.62
2	00	4.29*				7	37	4.58
2	12	4.50				7	47	4.50
2	17	4.42				7	57	4.46
2	27	4.40				8	07	4.40
2	37	4.33				8	22	4.30
2	47	4.28				8	37	3.75
2	57	4.22				8	42	3.55
3	07	4.16				8	47	3.35
3	17	4.10				8	52	3.15
3	27	4.00				8	58	3.00
3	37	3.92						
3	47	3.83						
3	57	3.70						
4	07	3.55						
4	17	3.38						
4	27	3.12						
4	31	3.00						

* Circuit opened for a few minutes at 2.07

Watt hours	96.555	13.942	24.558

Battery 29
6 March 1953

Discharge rate 300 amp			Discharge rate 200 amp			Discharge rate 100 amp		
CCV 6.33								
Min.	Sec.	Volts	Min.	Sec.	Volts	Min.	Sec.	Volts
0	5	4.70	4	30	Start	6	22	Start
0	10	4.68	4	40	4.05	6	30	4.55
0	20	4.63	4	50	4.03	6	45	4.68
0	30	4.61	5	00	4.00	7	00	4.72
0	40	4.58	5	10	3.96	7	15	4.72
0	50	4.53	5	20	3.90	7	30	4.78
1	00	4.50	5	30	3.80	7	45	4.73
1	10	4.48	5	40	3.70	8	00	4.70
1	20	4.43	5	50	3.60	8	15	4.68
1	30	4.40	6	00	3.50	8	30	4.62
1	40	4.36	6	10	3.35	8	45	4.53
1	50	4.32	6	15	3.20	9	00	4.42
2	00	4.28	6	22	3.00	9	15	4.35
2	10	4.25				9	30	4.29
2	20	4.22				9	45	4.20
2	30	4.16				10	00	4.06
2	40	4.12				10	10	3.92
2	50	4.08				10	20	3.76
3	00	4.00				10	30	3.60
3	10	3.92				10	40	3.48
3	20	3.90				10	50	3.35
3	30	3.82				11	00	3.19
3	40	3.72				11	5	3.10
3	50	3.60				11	11	3.00
4	00	3.50						
4	10	3.35						
4	20	3.16						
4	25	3.10						
4	30	3.00						
Watt hours		92.795			23.071			34.389

APPENDIX 2
Table 4.2b (sheet 20)

Battery 30
6 March 1953

Discharge rate 300 amp			Discharge rate 200 amp			Discharge rate 100 amp		
OCV 6.34								
Min.	Sec.	Volts	Min.	Sec.	Volts	Min.	Sec.	Volts
						6	37	Start
0	5	4.75	4	37	Start	6	45	4.50
0	10	4.72	4	40	3.90	7	00	4.62
0	20	4.70	4	50	4.00	7	15	4.65
0	30	4.62	5	00	4.02	7	30	4.68
0	40	4.60	5	10	3.98	7	45	4.68
0	50	4.55	5	20	3.92	8	00	4.63
1	00	4.50	5	30	3.85	8	15	4.58
1	10	4.48	5	40	3.78	8	30	4.51
1	20	4.43	5	50	3.70	8	45	4.45
1	30	4.40	6	00	3.62	9	00	4.40
1	40	4.35	6	10	3.50	9	15	4.38
1	50	4.33	6	20	3.35	9	30	4.30
2	00	4.30	6	30	3.15	9	45	4.18
2	10	4.25	6	37	3.00	10	00	4.00
2	20	4.22				10	10	3.90
2	30	4.18				10	20	3.80
2	40	4.12				10	30	3.68
2	50	4.08				10	40	3.50
3	00	4.03				10	50	3.32
3	10	4.00				11	00	3.18
3	20	3.92				11	10	3.00
3	30	3.85						
3	40	3.78						
3	50	3.70						
4	00	3.60						
4	10	3.45						
4	20	3.30						
4	30	3.13						
4	37	3.00						
Watt hours		95.480			24.701			32.056

APPENDIX 2
Table 4.2b (sheet 21)

Battery 31
6 March 1953

Discharge rate 300 amp			Discharge rate 200 amp			Discharge rate 100 amp		
OCV 6.29								
Min.	Sec.	Volts	Min.	Sec.	Volts	Min.	Sec.	Volts
0	5	4.18	1	30	Start	3	40	Start
0	10	4.10	1	40	4.00	3	50	4.55
0	20	3.92	1	50	3.98	4	00	4.63
0	30	3.84	2	00	3.92	4	10	4.65
0	40	3.72	2	10	3.88	4	20	4.67
0	50	3.62	2	20	3.80	4	30	4.68
1	00	3.48	2	30	3.60	4	40	4.65
1	10	3.35	2	40	3.62	4	50	4.62
1	20	3.20	2	50	3.52	5	00	4.62
1	30	3.00	3	00	3.45	5	10	4.60
			3	10	3.32	5	20	4.58
			3	20	3.25	5	30	4.55
			3	30	3.12	5	40	4.53
			3	40	3.00	5	50	4.52
						6	00	4.50
						6	15	4.43
						6	30	4.40
						6	45	4.32
						7	00	4.25
						7	15	4.20
						7	30	4.10
						7	45	4.03
						8	00	*
						8	15	*
						8	30	4.00
						8	45	3.85
						9	00	3.70
						9	15	-.--
						9	30	3.55
						9	45	3.40
						10	00	3.30
						10	10	3.18
						10	20	3.05
						10	25	3.00
Watt hours		27.375			25.784			45.305

* Circuit opened for 10 sec.

APPENDIX 2
Table 4.2b (sheet 22)

Battery 32
6 March 1953

Discharge rate 300 amp			Discharge rate 200 amp			Discharge rate 100 amp		
OCV 6.28								
Min.	Sec.	Volts	Min.	Sec.	Volts	Min.	Sec.	Volts
0	5	4.32	1	43	Start	3	59	Start
0	10	4.23	1	50	3.98	4	00	4.60
0	20	4.15	2	00	3.92	4	10	4.50
0	30	4.05	2	10	3.88	4	20	4.52
0	40	3.98	2	20	3.80	4	30	4.53
0	50	3.88	2	30	3.72	4	40	4.52
1	00	3.75	2	40	-.--	4	50	4.52
1	10	3.60	2	50	3.60	5	00	4.52
1	20	3.44	3	00	3.52	5	10	4.48
1	30	3.25	3	10	3.42	5	20	4.48
1	40	3.04	3	20	3.38	5	30	4.45
1	43	3.00	3	30	3.28	5	40	4.42
			3	40	3.16	5	50	4.40
			3	50	3.08	6	00	4.40
			3	59	3.00	6	15	4.34
						6	30	4.30
						6	45	4.20
						7	00	4.12
						7	15	4.00
						7	30	3.90
						7	45	3.80
						8	00	3.70
						8	15	3.55
						8	30	3.40
						8	40	3.18
						8	45	3.15
						8	50	3.12
						9	02	3.00
Watt hours		32.480			26.691			34.432

APPENDIX 2
Table 4.3a -

Charging data for June 1952 test batteries after 8 months storage

TRAY Number 1 Cycle 3: Charged for 18 hours at 5 amperes
On Charge 12:05 p.m. 3/9/53

Battery	Cell	Starting Time	Temperature	Specific Gravity	Volts
1 T	1	9 Mar.	31.2	1.240	
	2	5:06 am	32.6	1.244	
	3		33.2	1.215	
2 T	1		33.6	1.211	
	2		33.3	1.230	
	3		32.0	1.230	
1 T	1	4:15pm	26.8		2.23
	2		27.0		2.24
	3		26.9		2.22
2 T	1		27.3		2.21
	2		27.2		2.22
	3		26.7		2.22
		10 Mar.			
1 T	1	5:45am	35.0		2.39
	2		34.5		2.37
	3		35.2		2.37
2 T	1		35.4		2.36
	2		35.0		2.39
	3		33.8		2.37
1 T	1	8:45am	32.0	1.310	2.13
	2		32.5	1.320	2.15
	3		32.6	1.290	2.12
2 T	1		33.0	1.288	2.12
	2		32.7	1.298	2.13
	3		31.4	1.302	2.14

Off Charge 6:05 a.m. 3/10/53

Table 4.3a , Continued (Sheet 2)

TRAY Number 2 On Charge 12:05 p.m. 3/9/53

Battery	Cell	Starting Time	Temperature	Specific Gravity	Volts
3U	1	9 Mar.	31.7	1.210	
	2	5:06 am	33.0	1.204	
	3		33.0	1.196	
4U	1		33.0	1.207	
	2		33.2	1.205	
	3		32.1	1.206	
3U	1	4:15 pm	26.7		2.20
	2		26.9		2.19
	3		27.3		2.19
4U	1		26.9		2.20
	2		26.9		2.19
	3		27.0		2.20
		10 Mar.			
3U	1	5:45 am	34.5		2.36
	2		34.8		2.34
	3		35.3		2.34
4U	1		35.7		2.35
	2		35.0		2.34
	3		34.0		2.36
3U	1	8:45 am	31.2	1.281	2.12
	2		32.1	1.279	2.12
	3		33.0	1.271	2.11
4U	1		32.2	1.284	2.13
	2		32.2	1.283	2.12
	3		31.7	1.279	2.13

Off Charge 6:05 a.m. 3/10/53

Table 4.3a , Continued (Sheet 3)

TRAY Number 3 On Charge 12:05 p.m. 3/9/53

Battery	Cell	Starting Time	Temperature	Specific Gravity	Volts
5U	1	9 Mar.	32.2	1.219	
	2	5 06am	33.2	1.221	
	3		33.0	1.215	
6U	1		33.0	1.218	
	2		32.8	1.219	
	3		32.3	1.219	
5U	1	4:15pm	26.6		2.22
	2		26.9		2.22
	3		27.0		2.22
6U	1		26.5		2.22
	2		26.4		2.22
	3		26.5		2.22
		10 Mar.			
5U	1	5:45am	34.6		2.37
	2		35.6		2.35
	3		35.7		2.36
6U	1		35.3		2.36
	2		34.8		2.37
	3		33.3		2.37
5U	1	8:45am	31.5	1.285	2.13
	2		32.0	1.288	2.12
	3		32.8	1.283	2.13
6U	1		32.0	1.283	2.13
	2		31.9	1.286	2.13
	3		31.0	1.284	2.13

Off Charge 6:05 a.m. 3/10/53

APPENDIX 2
Table 4.3a', Continued (Sheet 4)

TRAY Number 6 On Charge 12:05 p.m. 3/9/53

Battery	Cell	Starting Time	Temperature	Specific Gravity	Volts
11T	1	9 Mar.	32.0	1.196	
	2	5:06am	32.9	1.196	
	3		33.0	1.192	
12T	1		33.0	1.199	
	2		33.0	1.200	
	3		32.1	1.203	
11T	1	4:15pm	26.2		2.17
	2		26.1		2.17
	3		26.8		2.17
12T	1		26.8		2.18
	2		26.5		2.17
	3		26.9		2.18
		10 Mar.			
11T	1	5:45am	33.2		2.35
	2		33.7		2.34
	3		34.7		2.33
12T	1		35.2		2.33
	2		34.8		2.33
	3		34.2		2.35
11T	1	8:45am	30.5	1.279	2.11
	2		31.4	1.285	2.12
	3		31.8	1.273	2.10
12T	1		32.1	1.282	2.10
	2		32.0	1.285	2.12
	3		30.9	1.286	2.12

Off Charge 6:05 a.m. 3/10/53

APPENDIX 2
Table 4.3a Continued (Sheet 6)

TRAY Number 8 On Charge 12:05 p.m. 3/9/53

Battery	Cell	Starting Time	Temperature	Specific Gravity	Volts
15U	1	9 Mar.	33.1	1.239	
	2	5:38am	34.0	1.200	
	3		34.6	1.196	
16U	1		33.9	1.193	
	2		33.7	1.193	
	3		33.0	1.190	
15U	1	4:30pm	27.0		2.24
	2		27.1		2.19
	3		27.8		2.19
16U	1		27.1		2.18
	2		27.0		2.19
	3		27.2		2.19
15U	1	5:45 am	34.8		2.39
	2	10 Mar.	35.3		2.34
	3		35.5		2.33
16U	1		35.6		2.32
	2		35.0		2.33
	3		33.7		2.33
15U	1	8:55 am	31.5	1.304	2.15
	2		32.1	1.279	2.11
	3		32.7	1.274	2.12
16U	1		32.0	1.266	2.11
	2		31.8	1.271	2.11
	3		31.0	1.269	2.12

Off Charge 6:05 a.m. 3/10/53

TRAY Number 11 On Charge 12:05 p.m. 3/9/53

Battery	Cell	Starting Time	Temperature	Specific Gravity	Volts
21T	1	9 Mar.	33.1	1.225	
	2	5:38 am	34.3	1.221	
	3		34.7	1.216	
22 M*	1		34.9	1.206	
	2		34.7	1.219	
	3		33.6	1.208	
21T	1	4:30 pm	27.0		2.20
	2		26.9		2.19
	3		27.1		2.19
22 M*	1		27.1		2.19
	2		26.9		2.21
	3		27.0		2.20
		10 Mar.			
21T	1	5:45 am	33.4		2.38
	2		34.2		2.34
	3		35.0		2.34
22 M*	1		34.8		2.31
	2		34.3		2.34
	3		33.5		2.33
21T	1	8:55 am	31.0	1.294	2.12
	2		31.9	1.296	2.12
	3		31.6	1.289	2.12
22 M*	1		32.0	1.282	2.11
	2		31.6	1.295	2.12
	3		30.0	1.284	2.12

M* = $MgSO_4$-Na_2SO_4

Off Charge 6:05 a.m. 3/10/53

TRAY Number 12 On Charge 12:05 p.m. 3/9/53

Battery	Cell	Starting Time	Temperature	Specific Gravity	Volts
23T	1	9 Mar.	35.0	1.209	
	2	6:04am	35.7	1.218	
	3		35.2	1.212	
24U	1		36.0	1.196	
	2		35.3	1.198	
	3		34.3	1.196	
23T	1	4:45pm	27.1		2.18
	2		27.0		2.20
	3		27.6		2.19
24U	1		27.2		2.18
	2		27.0		2.18
	3		27.1		2.19
23T	1	5:45 am	33.7		2.35
	2	10 Mar.	34.6		2.36
	3		35.3		2.37
24U	1		35.2		2.35
	2		34.4		2.36
	3		33.5		2.36
23T	1	9:02 am	31.2	1.300	2.13
	2		31.8	1.307	2.14
	3		31.8	1.302	2.13
24U	1		32.0	1.283	2.13
	2		31.8	1.286	2.13
	3		31.3	1.290	2.14

Off Charge 6:05 a.m. 3/10/53

TRAY Number 14

On Charge 12:05 p.m. 3/9/53

Battery	Cell	Starting Time	Temperature	Specific Gravity	Volts
27T	1	9 Mar.	34.1	1.196	
	2	6:04 am	35.0	1.200	
	3		34.8	1.198	
28U	1		34.8	1.190	
	2		34.1	1.190	
	3		33.6	1.181	
27T	1	4:45 pm	26.9		2.17
	2		26.8		2.18
	3		27.0		2.17
28U	1		26.7		2.18
	2		26.4		2.17
	3		26.5		2.17
27T	1	10 Mar.	33.5		2.34
	2	5:45 am	34.3		2.33
	3		34.7		2.33
28U	1		34.7		2.33
	2		33.8		2.33
	3		32.6		2.33
27T	1	9:02 am	31.0	1.282	2.11
	2		31.3	1.288	2.12
	3		31.2	1.285	2.11
28U	1		31.2	1.272	2.11
	2		31.0	1.272	2.12
	3		30.2	1.264	2.11

Off Charge 6:05 a.m. 3/10/53

Table 4.3a . Continued (Sheet 10)

TRAY Number 15 On Charge 12:05 p.m. 3/9/53

Battery	Cell	Starting Time	Temperature	Specific Gravity	Volts
29U	1	9 Mar	35.2	1.190	
	2	6:00am	36.3	1.195	
	3		36.5	1.190	
30T	1		36.9	1.211	
	2		37.9	1.206	
	3		36.6	1.209	
29U	1	4:45pm	26.2		2.18
	2		26.8		2.18
	3		27.2		2.18
30T	1		27.0		2.18
	2		26.6		2.18
	3		27.0		2.18
29U	1	5:45am	32.8		2.37
	2	10 Mar.	34.0		2.35
	3		35.2		2.38
30T	1		35.0		2.38
	2		34.3		2.35
	3		33.8		2.38
29U	1		30.1	1.274	2.12
	2	9:02 am	31.1	1.280	2.13
	3		32.2	1.271	2.12
30T	1		32.1	1.294	2.13
	2		32.0	1.298	2.13
	3		30.9	1.294	2.13

Off Charge 6:05 a.m. 3/10/53

TRAY Number 16

On Charge 12:05 p.m. 3/9/53

Battery	Cell	Starting Time	Temperature	Specific Gravity	Volts
31U	1	9 Mar	35.7	1.203	
	2	6:00 am	36.1	1.201	
	3		37.0	1.210	
32T	1		37.6	1.216	
	2		38.1	1.218	
	3		35.2	1.231	
31U	1	4:45 pm	27.1		2.23
	2		27.8		2.22
	3		28.0		2.24
32T	1		27.9		2.24
	2		27.5		2.25
	3		27.6		2.26
31U	1	5:45 am	34.0		2.35
	2	10 Mar.	35.0		2.35
	3		36.0		2.36
32T	1		35.7		2.34
	2		35.0		2.35
	3		34.0		2.37
31U	1		31.2	1.265	2.12
	2	9:02 am	32.2	1.269	2.11
	3		33.1	1.272	2.12
32T	1		32.9	1.285	2.11
	2		32.1	1.284	2.11
	3		31.1	1.297	2.13

Off Charge 6:05 a.m. 3/10/53

APPENDIX 2
Table 4.3b Discharge data, 3rd cycle

Battery 1, Treated
10 March 1958

Discharge rate .00 amp		Discharge rate 300 amp		Discharge rate 100 amp		Discharge rate 100 amp	
OCV 6.40							
Min.Sec.	Volts	Min.Sec.	Volts	Min.Sec.	Volts	Min.Sec.	Volts
2	4.51	3 6	Start	6 13	Start	11 20	3.58
5	4.40	3 10	3.99	6 20	4.48	11 25	3.52
10	4.30	3 15	3.99	6 25	4.49	11 30	3.50
15	4.28	3 20	3.99	6 30	4.49	11 35	3.48
20	4.22	3 25	3.99	6 40	4.50	11 40	3.46
30	4.17	3 30	3.99	6 50	4.50	11 45	3.41
40	4.10	3 35	4.00	7 00	4.51	11 50	3.39
50	4.02	3 40	3.99	7 10	4.50	11 55	3.38
1 00	3.94	3 45	3.99	7 20	4.49	12 00	3.36
1 5	3.91	3 50	3.96	7 30	4.47	12 5	3.32
1 10	3.89	3 55	3.92	7 40	4.45	12 10	3.30
1 15	3.86	4 00	3.90	7 50	4.41	12 15	3.28
1 20	3.80	4 5	3.89	8 00	4.40	12 20	3.27
1 25	3.77	4 10	3.88	8 10	4.38	12 25	3.22
1 30	3.72	4 15	3.86	8 20	4.36	12 30	3.20
1 35	3.69	4 20	3.81	8 30	4.31	12 35	3.19
1 40	3.66	4 25	3.80	8 40	4.29	12 40	3.18
1 45	3.60	4 30	3.76	8 50	4.25	12 45	3.15
1 50	3.59	4 35	3.73	9 00	4.21	12 50	3.13
1 55	3.56	4 40	3.70	9 10	4.18	12 55	3.11
2 00	3.50	4 45	3.69	9 20	4.12	13 00	3.10
2 5	3.46	4 50	3.67	9 30	4.10	13 5	3.09
2 10	3.43	4 55	3.61	9 40	4.06	13 10	3.06
2 15	3.40	5 00	3.60	9 50	4.01	13 15	3.02
2 20	3.37	5 5	3.58	10 00	3.98	13 18	3.00
2 25	3.32	5 10	3.52	10 10	3.92		
2 30	3.29	5 15	3.50	10 20	3.88		
2 35	3.25	5 20	3.47	10 30	3.82		
2 40	3.22	5 25	3.41	10 35	3.79		
2 45	3.19	5 30	3.39	10 40	3.76		
2 50	3.13	5 35	3.34	10 45	3.73		
2 55	3.10	5 40	3.30				
3 00	3.07	5 45	3.25	10 50	3.71		
3 5	3.01	5 50	3.20	10 55	3.70		
3 6	3.00	5 55	3.17	11 00	3.69		
		6 00	3.11	11 5	3.64		
		6 5	3.09	11 10	3.62		
		6 10	3.04	11 15	3.60		
		6 13	3.00				
		Min.					
Watt Hrs.	57.490	37.850		46.270			

Battery 2, Treated
10 March 1958

Discharge rate 300 amp			Discharge rate 200 amp			Discharge rate 100 amp		
OCV 6.58								
Min.	Sec.	Volts	Min.	Sec.	Volts	Min.	Sec.	Volts
	2	4.60	3	42	Start	6	37	Start
	5	4.42	3	45	3.98	6	40	4.45
	10	4.38	3	50	4.00	6	45	4.50
	15	4.32	3	55	4.00	6	50	4.52
	20	4.30	4	00	3.99	6	55	4.53
	30	4.25	4	10	3.99	7	00	4.54
	40	4.19	4	20	3.96	7	5	4.53
	50	4.10	4	25	3.98	7	10	4.55
1	00	4.07	4	30	3.92	7	20	4.54
1	10	4.00	4	35	3.91	7	30	4.52
1	20	3.92	4	40	3.90	7	40	4.50
1	30	3.88	4	45	3.89	7	50	4.49
1	35	3.89	4	50	3.87	8	00	4.48
1	40	3.88	4	55	3.88			
1	45	3.78	5	00	3.81	8	10	4.41
1	50	3.78	5	05	3.88	8	20	4.40
1	55	3.69	5	10	3.78	8	30	4.38
2	00	3.66	5	15	3.78	8	40	4.33
2	5	3.62	5	20	3.76	8	50	4.27
2	10	3.60	5	25	3.66	9	00	4.22
2	15	3.58	5	30	3.62	9	10	4.18
2	20	3.50	5	35	3.60	9	20	4.11
2	25	3.48	5	40	3.58	9	30	4.07
2	30	3.47	5	45	3.53	9	40	4.00
2	35	3.42	5	50	3.49	9	50	3.98
2	40	3.40	5	55	3.45	10	00	3.90
2	45	3.38	6	00	3.41	10	5	3.88
2	50	3.35	6	05	3.38	10	10	3.86
2	55	3.30	6	10	3.32	10	15	3.81
3	00	3.29	6	15	3.26	10	20	3.79
			6	20	3.21	10	25	3.76
3	05	3.26	6	25	3.17	10	30	3.70
3	10	3.22	6	30	3.10	10	35	3.68
3	15	3.20	6	35	3.05	10	40	3.62
3	20	3.17	6	37	3.00	10	45	3.60
3	25	3.12				10	50	3.55
3	30	3.10				10	55	3.50
3	5	3.07				11	00	3.48
3	40	3.02				11	5	3.40
3	42	3.00				11	10	3.40
						11	15	3.38
						11	20	3.32
						11	25	3.27
						11	30	3.22
						11	35	3.20

Battery 2, Treated Continued
10 March 1958

Discharge rate
100 amp

OCV 6.38

Min.	Sec.	Volts
11	40	3.15
11	45	3.10
11	50	3.08
11	57	3.00

Watt Hours	68.270	35.738	36.980

Battery #3
10 March 1953

OCV 6.33

Discharge rate 300 amp			Discharge rate 200 amp			Discharge rate 100 amp		
min	sec	volts	min	sec	volts	min	sec	volts
			5	00	Start	7	20	Start
0	02	4.78		05	3.98		25	4.35
0	05	4.62		10	3.99		30	4.48
	10	4.55		15	4.00		40	4.50
	15	4.51		20	4.00		50	4.58
	20	4.50		25	4.01	8	00	4.59
	30	4.48		30	4.00		10	4.59
	40	4.43		35	4.00		20	4.59
	50	4.40		40	3.99		30	4.58
1	00	4.37		45	3.98		40	4.53
	10	4.31		50	3.94		50	4.49
	20	4.30		55	3.90	9	00	4.43
	30	4.28	6	00	3.89		10	4.33
	40	4.21		05	3.84		20	4.27
	50	4.19		10	3.80		30	4.18
2	00	4.14		15	3.73		40	4.10
	10	4.10		20	3.72		50	4.02
	20	4.08		25	3.70	10	00	3.92
	30	4.03		30	3.66		05	3.91
	40	4.00		35	3.60		10	3.88
	50	3.97		40	3.55		15	3.84
3	00	3.91		45	3.50		20	3.80
	05	3.90		50	3.42		25	3.77
	10	3.87		55	3.40		30	3.70
	15	3.82	7	00	3.38		35	3.68
	20	3.80		05	3.30		40	3.61
	25	3.78		10	3.21		45	3.58
	30	3.74		15	3.11		50	3.50
	35	3.71		20	3.00		55	3.41
	40	3.69				11	00	3.30
	45	3.67					05	3.19
	50	3.62					10	3.09
	55	3.60				11	12	3.00
4	00	3.56						
	05	3.51						
	10	3.49						
	15	3.46						
	20	3.41						
	25	3.38						
	30	3.33						
	35	3.30						
	40	3.23						
	45	3.19						
	50	3.14						
	55	3.09						
5	00	3.00						
Watt hours		99.220			28.843			26.663

APPENDIX 2
Table 4.3b (sheet 5)

Battery #4
10 March 53

OCV 6.38

Discharge rate 300 amp			Discharge rate 200 amp			Discharge rate 100 amp					
min	sec	volts	min	sec	volts	min	sec	volts	min	sec	volts
0	02	4.50	3	50	Start	7	06	Start			
	05	4.30		55	3.99		10	4.40	12	10	3.32
	10	4.21	4	00	4.00		15	4.48		25	3.18
	15	4.20		05	4.00		20	4.50		30	3.15
	20	4.18		10	3.99		25	4.51		35	3.10
	30	4.12		15	3.99		30	4.53		40	3.08
	40	4.09		20	3.99		40	4.58		45	3.06
	50	4.04		25	3.99		50	4.58		50	3.01
1	00	4.00		35	3.98	8	00	4.58		51	3.00
	10	3.97		40	3.98		10	4.58			
	20	3.91		45	3.97		20	4.58			
	30	3.85		50	3.93		30	4.56			
	35	3.85		55	3.90		40	4.52			
	40	3.81	5	00	3.89		50	4.51			
	45	3.79		05	3.88	9	00	4.50			
	50	3.78		10	3.84		10	4.48			
	55	3.75		15	3.82		20	4.46			
2	00	3.70		20	3.79		30	4.42			
	05	3.70		25	3.77		40	4.40			
	10	3.68		30	3.75		50	4.37			
	15	3.65		35	3.70	10	00	4.33			
	20	3.61		40	3.69		10	4.30			
	25	3.59		45	3.67		20	4.22			
	30	3.57		50	3.63		30	4.18			
	35	3.52		55	3.60		40	4.11			
	40	3.50	6	00	3.58		50	4.03			
	45	3.48		05	3.54	11	00	3.97			
	50	3.45		10	3.50		05	3.92			
	55	3.41		15	3.47		10	3.90			
3	00	3.39		20	3.41		15	3.89			
	05	3.37		25	3.39		20	3.80			
	10	3.32		30	3.24		25	3.76			
	20	3.25		40	3.27		30	3.70			
	25	3.20		45	3.22		35	3.63			
	30	3.19		50	3.18		40	3.60			
	35	3.15		55	3.13		45	3.54			
	40	3.10	7	00	3.09		50	3.51			
	45	3.07		05	3.02		55	3.48			
	50	3.00		06	3.00	12	00	3.42			
Watt hours		71.250			39.933						39.310

Battery #5
10 March 1953

OCV 6.38

Discharge rate 300 amp			Discharge rate 200 amp			Discharge rate 100 amp		
min	sec	volts	min	sec	volts	min	sec	volts
0	02	4.45	3	40	Start	6	46	Start
	05	4.30		45	4.00		50	4.48
	10	4.20		50	4.00		55	4.48
	15	4.15		55	4.00	7	00	4.50
	20	4.08	4	00	4.00		05	4.52
	30	4.00		05	4.00		10	4.53
	40	3.98		10	4.00		20	4.53
	50	3.93		15	3.99		30	4.57
1	00	3.89		20	3.98		40	4.56
	10	3.87		25	3.95		50	4.53
	20	3.81		30	3.92	8	00	4.52
	30	3.78		35	3.90		10	4.51
	35	3.71		40	3.89		20	4.50
	40	3.69		45	3.89		30	4.48
	45	3.68		50	3.88		40	4.40
	50	3.66		55	3.85		50	4.38
	55	3.63	5	00	3.82	9	00	4.32
2	00	3.61		05	3.80		10	4.28
	05	3.60		10	3.79		20	4.20
	10	3.58		15	3.78		30	4.14
	15	3.55		20	3.71		40	4.08
	20	3.51		25	3.69		50	4.00
	25	3.48		30	3.69	10	00	3.95
	30	3.46		35	3.63		10	3.88
	35	3.42		40	3.60		15	3.80
	40	3.40		45	3.60		20	3.78
	45	3.38		50	3.56		25	3.71
	50	3.35		55	3.52		30	3.65
	55	3.30	6	00	3.49		35	3.59
3	00	3.28		05	3.45		40	3.50
	05	3.26		10	3.40		45	3.40
	10	3.21		15	3.38		50	3.25
	15	3.19		20	3.30		55	3.10
	20	3.16		25	3.27		58	3.00
	25	3.12		30	3.21			
	30	3.08		35	3.14			
	35	3.05		40	3.09			
	40	3.00		45	3.02			
				46	3.00			
Watt hours		66.900			38.047			29.343

APPENDIX 2
Table 4.3b (sheet 7)

Battery #6
10 March 1953

Discharge	Discharge rate 300 amp				Discharge rate 200 amp				Discharge rate 100 amp			
OCV 6.39												
min	sec	volts	min	sec	volts	min	sec	volts	min	sec	volts	
0	02	4.60		20	3.60	3	57	Start	6	52	Start	
	05	4.30		25	3.59	4	00	3.97		55	4.40	
	10	4.18		30	3.56		05	3.99	7	00	4.48	
	15	4.14		35	3.52		10	3.99		05	4.50	
	20	4.11		40	3.50		15	4.00		10	4.52	
	30	4.08		45	3.49		20	4.00		20	4.57	
	40	4.01		50	3.44		25	3.99		30	4.58	
	50	3.98		55	3.41		30	3.99		40	4.58	
1	00	3.92	3	00	3.40		35	3.99		50	4.58	
	05	3.90		05	3.38		40	3.98	8	00	4.58	
	10	3.89		10	3.35		45	3.97		10	4.54	
	15	3.88		15	3.31		50	3.94		20	4.52	
	20	3.86		20	3.29		55	3.92		30	4.50	
	25	3.83		25	3.25	5	00	3.90		40	4.48	
	30	3.80		30	3.21		05	3.88		50	4.41	
	35	3.79		35	3.19		10	3.87	9	00	4.39	
	40	3.78		40	3.17		15	3.84		10	4.33	
	45	3.76		45	3.11		20	3.80		20	4.28	
	50	3.72		50	3.08		25	3.78		30	4.20	
	55	3.70		55	3.03		30	3.77		40	4.14	
2	00	3.69		57	3.00		35	3.70		50	4.10	
	05	3.68					40	3.70	10	00	4.01	
	10	3.64					45	3.68		10	3.94	
	15	3.62					50	3.62		20	3.88	
							55	3.60		30	3.77	
						6	00	3.57		35	3.71	
							05	3.50		40	3.69	
							10	3.48		45	3.62	
							15	3.44		50	3.58	
							20	3.40		55	3.48	
							25	3.32	11	00	3.39	
							30	3.29		05	3.29	
							35	3.23		10	3.19	
							40	3.19		15	3.02	
							45	3.12		16	3.00	
							50	3.05				
							52	3.00				
Watt hours				72.650				35.893			30.725	

Battery 11, Treated
10 March 1958

Discharge rate 300 amp			Discharge rate 200 amp			Discharge rate 100 amp			Discharge rate 100 amp		
OCV 6.81											
Min.	Sec.	Volts	Min.	Sec.	Volts	Min.	Sec.	Volts	Min.	Sec.	Volts
	2	4.60	4	8	Start	6	51	Start	12	15	3.33
	5	4.48	4	10	3.90	6	55	4.40	12	20	3.30
	10	4.42	4	15	3.96	7	--	4.46	12	25	3.28
	15	4.40	4	20	3.98	7	10	4.48	12	30	3.25
	20	4.39	4	30	3.98	7	20	4.50	12	35	3.22
	30	4.38	4	35	3.95	7	30	4.50	12	40	3.20
	40	4.39	4	40	3.92	7	40	4.50	12	45	3.18
	50	4.27	4	45	3.91	7	50	4.50	12	50	3.12
1	-	4.20	4	50	3.90	8	-	4.49	12	55	3.10
1	10	4.18	4	55	3.89	8	10	4.47	13	-	3.08
1	20	4.10	5	-	3.88	8	20	4.42	13	02	3.00
1	30	4.04	5	5	3.85	8	30	4.40			
1	40	4.01	5	10	3.82	8	40	4.38			
1	50	3.93	5	15	3.80	8	50	4.36			
2	-	3.89	5	20	3.79	9	-	4.31			
2	5	3.87	5	25	3.77	9	10	4.29			
2	10	3.83	5	30	3.72	9	20	4.20			
2	15	3.81	5	35	3.70	9	30	4.23			
2	20	3.80	5	40	3.68	9	40	4.20			
2	25	3.76	5	45	3.65	9	50	4.16			
2	30	3.72	5	50	3.61	10	-	4.11			
2	35	3.70	5	55	3.58	10	10	4.07			
2	40	3.68	6	-	3.52	10	20	4.01			
2	45	3.63	6	5	3.50	10	30	3.98			
2	50	3.61	6	10	3.48	10	40	3.93			
2	55	3.59	6	15	3.40	10	50	3.89			
3	-	3.54	6	20	3.33	11	-	3.84			
3	5	3.52	6	25	3.30	11	5	3.80			
3	10	3.49	6	30	3.27	11	10	3.78			
3	15	3.47	6	35	3.20	11	15	3.75			
3	20	3.42	6	40	3.18	11	20	3.72			
3	25	3.38	6	45	3.08	11	25	3.64			
3	30	3.35	6	51	3.00	11	30	3.65			
3	35	3.30				11	35	3.62			
3	40	3.28				11	40	3.60			
3	45	3.22				11	45	3.57			
3	50	3.20				11	50	3.51			
3	55	3.14				11	55	3.49			
4	-	3.10				12	-	3.47			
4	5	3.03				12	5	3.44			
4	8	3.00				12	10	3.40			
Watt hrs.		79.380		38.048				41.213			

Battery 12, Treated
10 March 1958

Discharge rate 300 amp OCV 6.31			Discharge rate 200 amp			Discharge rate 100 amp		
Min.	Sec.	Volts	Min.	Sec.	Volts	Min.	Sec.	Volts
			5	13	Start	7	24	Start
	5	4.70	5	15	3.90	7	27	4.02
	10	4.70	5	20	3.98	7	30	4.02
	15	4.69	5	25	3.99	7	35	4.40
	20	4.69	5	30	4.00	7	45	4.48
	30	4.62	5	35	4.00	7	50	4.50
	40	4.60	5	40	3.99	8	-	4.52
	50	4.58	5	45	3.99	8	10	4.52
1	-	4.53	5	50	3.99	8	20	4.53
1	10	4.50	5	55	3.98	8	30	4.53
1	20	4.47	6	-	3.92	8	40	4.51
1	30	4.42	6	5	3.90	8	50	4.50
1	40	4.39	6	10	3.86	9	-	4.46
1	50	4.37	6	15	3.83	9	10	4.41
2	-	4.31	6	20	3.79	9	20	4.39
2	10	4.29	6	25	3.76	9	30	4.26
2	20	4.27	6	30	3.69	9	40	4.20
2	30	4.21	6	35	3.63	9	50	4.11
2	40	4.13	6	40	3.60	10	-	4.00
2	50	4.12	6	45	3.51	10	10	3.90
3	-	4.09	6	50	3.46	10	20	3.80
3	10	4.03	6	55	3.40	10	30	3.71
3	20	3.99	7	-	3.32	10	35	3.66
3	30	3.93	7	5	3.28	10	40	3.65
3	35	3.89	7	10	3.20	10	45	3.61
3	40	3.87	7	15	3.16	10	50	3.59
3	45	3.84	7	20	3.09	10	55	3.58
3	50	3.82	7	24	3.00	11	-	3.57
3	55	3.79				11	5	3.55
4	-	3.75				11	10	3.52
4	5	3.71				11	15	3.50
4	10	3.68				11	20	3.49
4	15	3.64				11	25	3.48
4	20	3.59				11	30	3.48
4	25	3.54				11	35	3.48
4	30	3.49				11	40	3.47
4	35	3.46				11	45	3.43
4	40	3.40				11	50	3.41
4	45	3.37				11	55	3.36
4	50	3.30				12	-	3.30
4	55	3.24				12	5	3.16
5	-	3.18				12	8	3.00
5	5	3.12						
5	10	3.05						
5	13	3.00	Watt hrs.	106.705	26.816	31.723		

APPENDIX 2
Table 4.3b (sheet 10)

Battery 13, Treated OCV 6.09 10 March 1958

Discharge rate 300 amp			Discharge rate 200 amp			Discharge rate 100 amp		
Min.	Sec.	Volts	Min.	Sec.	Volts	Min.	Sec.	Volts
	0	4.35	4	32	Start	7	5	Start
	5	4.41	4	35	3.95	7	10	4.38
	10	4.38	4	40	3.97	7	15	4.43
	15	4.30	4	45	3.99	7	20	4.49
	20	4.28	4	50	3.99	7	30	4.50
	30	4.28	4	55	3.98	7	40	4.50
	40	4.20	5	-	3.98	7	50	4.51
	50	4.17	5	5	3.97	8	-	4.51
1	-	4.13	5	10	3.94	8	10	4.50
1	10	4.09	5	15	3.92	8	20	4.50
1	20	4.04	5	20	3.90	8	30	4.48
1	30	4.00	5	25	3.90	8	40	4.43
1	40	3.99	5	30	3.88	8	50	4.41
1	50	3.95	5	35	3.84	9	-	4.38
2	-	3.90	5	40	3.82	9	10	4.32
2	10	3.86	5	45	3.80	9	20	4.27
2	20	3.79	5	50	3.78	9	30	4.19
2	30	3.77	5	55	3.74	9	40	4.11
2	35	3.76	6	-	3.70	9	50	4.03
2	40	3.72	6	5	3.68	10	-	3.98
2	45	3.70	6	10	3.61	10	10	3.90
2	50	3.69	6	15	3.59	10	20	3.80
2	55	3.68	6	20	3.58	10	30	3.69
3	-	3.68	6	25	3.50	10	35	3.66
3	5	3.61	6	30	3.46	10	40	3.61
3	10	3.59	6	35	3.41	10	45	3.56
3	15	3.57	6	40	3.37	10	50	3.54
3	20	3.52	6	45	3.29	10	55	3.50
3	25	3.50	6	50	3.22	11	-	3.46
3	30	3.49	6	55	3.17	11	5	3.39
3	35	3.48	7	-	3.09	11	10	3.32
3	40	3.41	7	5	3.00	11	15	3.21
3	45	3.39				11	20	3.09
3	50	3.00				11	22	3.00
3	55	3.31						
4	-	3.29						
4	5	3.25						
4	10	3.21						
4	15	3.16						
4	20	3.13						
4	25	3.09						
4	30	3.03						
4	32	3.00						
Watt hrs.		86.015			81.273			29.345

Battery 14, Treated OCV 6.38 10 March 1958

Discharge rate 300 amp			Discharge rate 200 amp			Discharge rate 100 amp		
Min.	Sec.	Volts	Min.	Sec.	Volts	Min.	Sec.	Volts
	2	4.50	4	40	Start	7	15	Start
	5	4.43	4	45	3.98	7	20	4.50
	10	4.40	4	50	3.98	7	30	4.48
	15	4.38	5	-	3.99	7	40	4.49
	20	4.33	5	5	3.98	7	50	4.50
	30	4.29	5	10	3.98	8	-	4.50
	40	4.27	5	15	3.97	8	10	4.50
	50	4.22	5	20	3.93	8	20	4.50
1	-	4.19	5	25	3.91	8	30	4.49
1	10	4.13	5	30	3.90	8	40	4.48
1	20	4.10	5	35	3.88	8	50	4.43
1	30	4.08	5	40	3.86	9	-	4.39
1	40	4.03	5	45	3.82	9	10	4.36
1	50	4.00	5	50	3.80	9	20	4.30
2	-	3.97	5	55	3.79	9	30	4.23
2	5	3.93	6	-	3.78	9	40	4.19
2	10	3.91	6	5	3.71	9	50	4.12
2	15	3.90	6	10	3.70	10	-	4.03
2	20	3.89	6	15	3.66	10	10	3.98
2	25	3.87	6	20	3.61	10	20	3.90
2	30	3.82	6	25	3.59	10	30	3.86
2	35	3.80	6	30	3.57	10	35	3.77
2	40	3.79	6	35	3.49	10	40	3.70
2	45	3.74	6	40	3.46	10	45	3.64
2	50	3.72	6	45	3.40	10	50	3.58
2	55	3.71	6	50	3.36	10	55	3.48
3	-	3.69	6	55	3.29	11	-	3.37
3	5	3.68	7	-	3.21	11	5	3.25
3	10	3.66	7	5	3.16	11	10	3.12
3	15	3.61	7	10	3.09	11	14	3.00
3	20	3.60	7	15	3.00			
3	25	3.53						
3	30	3.53						
3	35	3.49						
3	40	3.48						
3	45	3.44						
3	50	3.40						
3	55	3.38						
4	-	3.32						
4	5	3.30						
4	10	3.28						
4	15	3.22						
4	20	3.20						
4	25	3.17						
4	30	3.11						
4	35	3.08						
4	40	3.00						
Watt Hrs.		89.295			80.510			27.568

Battery 15, Untreated — OCV 6.39 — 10 March 1950

Discharge rate 300 amp			Discharge rate 200 amp			Discharge rate 100 amp		
Min.	Sec.	Volts	Min.	Sec.	Volts	Min.	Sec.	Volts
	2	4.90	5	47	Start	7	16	Start
	5	4.72		55	4.01	7	20	4.50
	10	4.70	6	-	4.00	7	25	4.60
	15	4.69	6	5	4.00	7	30	4.63
	20	4.67	6	10	4.00	7	40	4.70
	30	4.60	6	15	3.99	7	50	4.71
	40	4.58	6	20	3.98	8	-	4.71
	50	4.52	6	25	3.90	8	10	4.71
1	-	4.50	6	30	3.86	8	20	4.70
1	10	4.48	6	35	3.82	8	30	4.69
1	20	4.44	6	40	3.77	8	40	4.68
1	30	4.41	6	45	3.69	8	50	4.66
1	40	4.39	6	50	3.60	9	-	4.60
1	50	4.34	6	55	3.51	9	10	4.59
2	-	4.31	7	-	3.40	9	20	4.51
2	10	4.30	7	5	3.30	9	30	4.42
2	20	4.28	7	10	3.17	9	40	4.38
2	30	4.25	7	15	3.02	9	50	4.29
2	40	4.20	7	16	3.00	10	-	4.20
2	50	4.18				10	10	4.08
3	-	4.13				10	20	3.80
3	10	4.11				10	25	3.62
3	20	4.09				10	30	3.40
3	30	4.03				10	35	3.30
3	40	4.01				10	40	3.15
3	50	3.99				10	45	3.00
4	-	3.98						
4	10	3.90						
4	20	3.88						
4	30	3.80						
4	35	3.78						
4	40	3.76						
4	45	3.72						
4	50	3.69						
4	55	3.66						
5	-	3.62						
5	5	3.59						
5	10	3.54						
5	15	3.50						
5	20	3.43						
5	25	3.40						
5	30	3.32						
5	35	3.23						
5	40	3.18						
5	45	3.05						
5	47	3.00						
Watt Hrs.		118.775			10.890			25.308

APPENDIX 2
Table 4.3b (sheet 13)

Battery 16, Untreated — OCV 6.82 — 10 March 1958

Discharge rate 300 amp			Discharge rate 200 amp			Discharge rate 100 amp		
Min.	Sec.	Volts	Min.	Sec.	Volts	Min.	Sec.	Volts
	2	4.90	5	46	Start	7	4	Start
	5	4.82	5	50	4.00	7	10	4.66
	10	4.80	5	55	4.01	7	15	4.68
	15	4.79	6	-	4.02	7	20	4.70
	20	4.78	6	5	4.02	7	30	4.77
	30	4.76	6	10	4.01	7	40	4.78
	40	4.70	6	15	3.99	7	50	4.80
	50	4.68	6	20	3.98	8	-	4.80
1	-	4.62	6	25	3.96	8	10	4.80
1	10	4.60	6	30	3.81	8	20	4.78
1	20	4.59	6	35	3.75	8	30	4.70
1	30	4.58	6	40	3.70	8	40	4.76
1	40	4.56	6	45	3.60	8	50	4.72
1	50	4.51	6	50	3.51	9	-	4.68
2	-	4.49	6	55	3.40	9	10	4.59
2	10	4.47	7	--	3.21	9	20	4.50
2	20	4.42	7	4	3.00	9	30	4.42
2	30	4.40				9	40	4.38
2	40	4.39				9	50	4.30
2	50	4.35				10	-	4.19
3	-	4.30				10	10	3.80
3	10	4.29				10	15	3.56
3	20	4.27				10	20	3.30
3	30	4.22				10	25	3.20
3	40	4.16				10	29	3.00
3	50	4.12						
4	-	4.10						
4	10	4.07						
4	20	4.01						
4	30	3.98						
4	35	3.95						
4	40	3.91						
4	45	3.89						
4	50	3.87						
4	55	3.81						
5	-	3.80						
5	5	3.76						
5	10	3.69						
5	15	3.63						
5	20	3.59						
5	25	3.50						
5	30	3.40						
5	35	3.30						
5	40	3.20						
5	46	3.00						
Watt Hrs.		122.780			16.283			25.467

APPENDIX 2
Table 4.3b (sheet 14)

Battery 21, Treated — OCV 6.35 — 18 March 1953

Discharge rate 300 amp

Min.	Sec.	Volts
	2	4.85
	5	4.80
	10	4.78
	15	4.76
	20	4.73
	30	4.70
	40	4.66
	50	4.63
1	-	4.61
1	10	4.60
1	20	4.55
1	30	4.53
1	40	4.50
1	50	4.48
2	-	4.46
2	10	4.42
2	20	4.40
2	30	4.38
2	40	4.34
2	50	4.30
3	-	4.29
3	10	4.23
3	20	4.20
3	30	4.18
3	40	4.14
3	50	4.11
4	-	4.09
4	10	4.02
4	20	3.99
4	30	3.94
4	35	3.91
4	40	3.88
4	45	3.86
4	50	3.81
4	55	3.80
5	-	3.74
5	5	3.71
5	10	3.65
5	15	3.61
5	20	3.55
5	25	3.50
5	30	3.43
5	35	3.37
5	40	3.29
5	45	3.19
5	50	3.10
5	56	3.00

Discharge rate 200 amp

Min.	Sec.	Volts
5	56	Start
6	-	3.85
6	5	3.87
6	10	3.88
6	20	3.81
6	25	3.78
6	30	3.71
6	35	3.65
6	40	3.59
6	45	3.51
6	50	3.43
6	55	3.31
7	-	3.17
7	03	3.00

Discharge rate 100 amp

Min.	Sec.	Volts
7	03	Start
7	10	4.48
7	15	4.51
7	20	4.56
7	30	4.60
7	40	4.61
7	50	4.60
8	-	4.60
8	10	4.59
8	20	4.51
8	30	4.42
8	40	4.32
8	50	4.25
9	-	4.21
9	10	4.10
9	20	3.98
9	30	3.75
9	35	3.61
9	40	3.50
9	45	3.40
9	50	3.30
9	55	3.22
10	-	3.12
10	05	3.03
10	07	3.00

Watt Hrs. 124.560 — 10.470 — 21.285

APPENDIX 2
Table 4.3b (sheet 15)

Battery 22 OCV 6.38 10 March 1953

Discharge rate 500 amp			Discharge rate 200 amp			Discharge rate 100 amp		
Min.	Sec.	Volts	Min.	Sec.	Volts	Min.	Sec.	Volts
	02	4.80	5	11	Start	6	26	Start
	05	4.78	5	15	3.89	6	30	4.45
	10	4.71	5	20	3.90	6	35	4.52
	15	4.69	5	25	3.92	6	40	4.58
	20	4.67	5	30	3.91	6	50	4.62
	30	4.62	5	35	3.89	7	-	4.65
	40	4.59	5	40	3.82	7	10	4.65
	50	4.58	5	45	3.78	7	20	4.65
1	-	4.51	5	50	3.71	7	30	4.63
1	10	4.49	5	55	3.65	7	40	4.61
1	20	4.48	6	-	3.60	7	50	4.58
1	30	4.42	6	5	3.51	8	-	4.49
1	40	4.39	6	10	3.45	8	10	4.40
1	50	4.35	6	15	3.38	8	20	4.30
2	-	4.32	6	20	3.21	8	30	4.20
2	10	4.30	6	26	3.00	8	40	4.10
2	20	4.27				8	50	4.00
2	30	4.22				9	-	3.88
2	40	4.20				9	5	3.78
2	50	4.18				9	10	3.61
3	-	4.13				9	15	3.44
3	10	4.09				9	20	3.30
3	20	4.05				9	25	3.05
3	30	4.00				9	27	3.00
3	40	3.96						
3	50	3.92						
4	-	3.88						
4	5	3.85						
4	10	3.80						
4	15	3.76						
4	20	3.72						
4	25	3.68						
4	30	3.61						
4	35	3.59						
4	40	3.58						
4	45	3.48						
4	50	3.40						
4	55	3.32						
5	-	3.22						
5	5	3.13						
5	11	3.00						
Watt Hrs.		107.295			15.138			21.528

Battery #23
Date: 3/10/53

300 amp Discharge						200 amp Discharge			100 amp Discharge		
OCV 6.40											
min	sec	volts	min	sec	volts	min	sec	volts	min	sec	volts
			5	10	3.42	5	45	Start	7	44	Start
	02	4.85		15	3.40	5	50	3.92	7	50	4.40
	05	4.78		20	3.33		55	3.93		55	4.45
	10	4.73		25	3.29	6	00	3.94	8	00	4.48
	15	4.71		30	3.22		10	3.96		10	4.51
	20	4.70		35	3.18		15	3.93		20	4.55
	30	4.64		40	3.09		20	3.91		30	4.57
	40	4.61		45	3.00		25	3.89		40	4.59
	50	4.56					30	3.87		50	4.58
1	00	4.53					35	3.80	9	00	4.57
	10	4.48					40	3.78		10	4.53
	20	4.43					45	3.75		20	4.50
	30	4.42					50	3.71		30	4.48
	40	4.39					55	3.69		40	4.43
	50	4.36				7	00	3.64		50	4.40
2	00	4.32					05	3.61	10	00	4.36
	10	4.30					10	3.52		10	4.31
	20	4.26					15	3.43		20	4.28
	30	4.22					20	3.41		30	4.21
	40	4.20					25	3.39		40	4.17
	50	4.15					30	3.30		50	4.09
3	00	4.12					35	3.20	11	00	4.04
	10	4.10					40	3.09		10	3.98
	20	4.06					44	3.00		20	3.88
	30	4.02								30	3.82
	40	3.98								35	3.78
	50	3.94								40	3.73
4	00	3.88								45	3.70
	05	3.85								50	3.66
	10	3.82								55	3.60
	15	3.81							12	00	3.50
	20	3.78								05	3.42
	25	3.76								10	3.37
	30	3.72								15	3.30
	35	3.70								20	3.22
	40	3.68								25	3.14
	45	3.63								30	3.08
	50	3.62								36	3.00
	55	3.58									
5	00	3.52									
	05	3.49									
Watt hours		117.540						24.190			33.500

APPENDIX 2
Table 4.3b (sheet 17)

Battery #24
Date: 3/10/53

300 amp Discharge						200 amp Discharge			100 amp Discharge		
OCV 6.36											
min	sec	volts	min	sec	volts	min	sec	volts	min	sec	volts
						5	55	Start	7	59	Start
0	02	4.80	5	00	3.60	6	00	3.95	8	05	4.45
	05	4.75		05	3.58		05	4.00		10	4.53
	10	4.72		10	3.55		10	4.00		20	4.55
	15	4.69		15	3.51		15	4.00		30	4.58
	20	4.66		20	3.47		20	4.00		40	4.60
	30	4.62		25	3.41		25	3.98		50	4.60
	40	4.58		30	3.38		30	3.95	9	00	4.60
	50	4.54		35	3.30		35	3.90		10	4.60
1	00	4.50		40	3.25		40	3.88		20	4.60
	10	4.48		45	3.20		45	3.86		30	4.60
	20	4.45		50	3.10		50	3.82		40	4.55
	30	4.44		55	3.00		55	3.80		50	4.52
	40	4.40				7	00	3.75	10	00	4.50
	50	4.37					05	3.71		10	4.45
2	00	4.34					10	3.68		20	4.40
	10	4.30					15	3.62		30	4.35
	20	4.28					20	3.58		40	4.31
	30	4.26					25	3.52		50	4.28
	40	4.23					30	3.49	11	00	4.21
	50	4.20					35	3.42		10	4.15
3	00	4.15					40	3.34		20	4.09
	10	4.11					45	3.25		30	4.00
	20	4.09					50	3.15		40	3.90
	30	4.06					55	3.07		50	3.79
	40	4.00					59	3.00	12	00	3.65
	50	3.98								05	3.60
4	00	3.94								10	3.50
	10	3.92								15	3.40
	15	3.90								20	3.30
	20	3.85								25	3.21
	25	3.82								30	3.14
	30	3.79								35	3.04
	35	3.75								39	3.00
	40	3.72									
	45	3.70									
	50	3.66									
	55	3.63									
Watt hours		121.160						25.310			32.713

Battery #27
Date: 3/10/53

300 amp Discharge			300 amp Discharge			200 amp Discharge			100 amp Discharge		
OCV 6.32											
min	sec	volts	min	sec	volts	min	sec	volts	min	sec	volts
						5	56	start	7	38	start
0	02	4.92	5	30	3.40	6	00	3.89	7	40	4.20
	05	4.83		35	3.31		05	3.94		45	4.40
	10	4.80		40	3.27		10	3.96		50	4.48
	15	4.78		45	3.19		15	3.95	8	00	4.53
	20	4.75		50	3.11		20	3.92		10	4.58
	30	4.70		56	3.00		25	3.90		20	4.56
	40	4.68			-		30	3.89		30	4.60
	50	4.65					35	3.85		40	4.59
1	00	4.61					40	3.82		50	4.56
	10	4.60					45	3.78	9	00	4.54
	20	4.55					50	3.72		10	4.53
	30	4.52					55	3.67		20	4.50
	40	4.50				7	00	3.62		30	4.38
	50	4.46					05	3.55		40	4.23
2	00	4.43					10	3.50		50	4.22
	10	4.41					15	3.42	10	00	4.18
	20	4.38					20	3.40		10	4.13
	30	4.35					25	3.30		20	4.05
	40	4.30					30	3.22		30	4.00
	50	4.27					35	3.10		35	3.90
3	00	4.24					38	3.00		40	3.90
	10	4.21								45	3.85
	20	4.18								50	3.82
	30	4.13								55	3.80
	40	4.10							11	00	3.78
	50	4.06								05	3.75
4	00	4.01								10	3.72
	10	3.98								15	3.69
	20	3.93								20	3.62
	30	3.85								25	3.55
	35	3.82								30	3.42
	40	3.81								35	3.20
	45	3.80								40	3.09
	50	3.75								41	3.00
	55	3.70									
5	00	3.68									
	05	3.62									
	10	3.59									
	15	-									
	25	3.45									
Watt hours		123.720						20.693			28.232

Battery #28
Date: 3/10/53

300 amp Discharge

OCV 6.33

min	sec	volts
0	02	4.90
	05	4.83
	10	4.82
	15	4.79
	20	4.76
	30	4.72
	40	4.69
	50	4.65
1	00	4.61
	10	4.60
	20	4.58
	30	4.54
	40	4.52
	50	4.50
2	00	4.47
	10	4.42
	20	4.40
	30	4.38
	40	4.35
	50	4.31
3	00	4.29
	10	4.24
	20	4.20
	30	4.16
	40	4.12
	50	4.08
4	00	4.04
	10	4.00
	20	3.99
	30	3.92
	40	3.85
	50	3.78
	55	3.75
5	00	3.70
	05	3.65
	10	3.61
	15	3.55
	20	3.50
	25	3.45
	30	3.40
	35	3.30
	40	3.20
	45	3.10
	50	-
	52	3.00

200 amp Discharge

min	sec	volts
5	52	Start
5	55	3.95
6	00	4.00
	05	4.00
	10	4.00
	15	3.99
	20	3.95
	25	3.92
	30	3.89
	35	3.80
	40	3.80
	45	3.75
	50	3.72
	55	3.69
7	00	3.62
	05	3.58
	10	3.49
	15	3.40
	20	3.30
	25	3.10
	29	3.00

100 amp Discharge

min	sec	volts
7	29	Start
7	35	4.55
	40	4.60
	50	4.68
8	00	4.70
	10	4.70
	20	4.70
	30	4.70
	40	4.68
	50	4.65
9	00	4.60
	10	4.53
	20	4.50
	30	4.47
	40	4.43
	50	4.40
10	00	4.36
	10	4.30
	20	4.20
	30	4.00
	35	3.90
	40	3.79
	45	3.64
	50	3.55
	55	3.42
11	00	3.35
	05	3.24
	10	3.11
	15	3.00

Watt hours 123.290 19.993 27.038

APPENDIX 2
Table 4.3b (sheet 20)

Battery #29
Date: 3/10/53

300 amp Discharge			200 amp Discharge			100 amp Discharge					
OCV 6.37											
min	sec	volts	min	sec	volts	min	sec	volts	min	sec	volts
			4	06	start	6	46	start			
0	02	4.80		10	4.03		50	4.52	12	50	3.89
	05	4.72		20	4.05		55	4.51		55	3.86
	10	4.70		30	4.03	7	00	4.56	13	00	3.85
	15	4.70		40	3.98		10	4.60		05	3.83
	20	4.68		50	3.92		20	4.60		10	3.82
	30	4.60	5	00	3.87		30	4.60		15	3.80
	40	4.58		05	3.80		40	4.60		20	3.80
	50	4.52		10	3.78		50	4.59		25	3.79
1	00	4.50		15	3.73	8	00	4.58		30	3.78
	20	4.40		20	3.70		10	4.55		35	3.75
	30	4.38		25	3.65		20	4.55		40	3.73
	40	4.32		30	3.61		30	4.53		45	3.71
	50	4.28		35	3.57		40	4.50		50	3.70
2	00	4.23		40	3.50		50	4.48		55	3.68
	10	4.18		45	3.48	9	00	4.46	14	00	
	20	4.12		50	3.42		10	4.42		05	3.68
	30	4.08		55	3.40		20	4.40		10	3.65
	40	4.00	6	00	3.37		30	4.37		15	3.63
	50	3.93		05	3.33		40	4.35		20	3.61
3	00	3.89		10	3.28		50	4.32		25	3.60
	05	3.81		15	3.23	10	00	4.30		30	3.59
	10	3.80		20	3.20		10	4.29		35	3.55
	15	3.74		25			20	4.22		40	3.54
	20	3.70		30	3.12		30	4.20		45	3.51
	25	3.65		35	3.08		40	4.19		50	3.50
	30	3.60		40	3.04		50	4.17		55	3.50
	35	3.57		46	3.00	11	00	4.13	15	00	3.48
	40	3.51					10	4.11		05	3.46
	45	3.38					20	4.10		10	3.42
	50	3.22					30	4.08		15	3.40
	55	3.12					40	4.03		20	3.38
4	00	3.05					50	3.99		25	3.35
	06	3.00				12	00	4.00		30	3.33
							05	3.99		35	3.30
							10	3.98		40	3.28
							15	3.95		45	3.22
							20	3.93		50	3.20
							25	3.92		55	3.15
							30	3.90	16	00	3.12
							35	3.90		05	3.10
							40	3.90		10	3.08
							45	3.90		15	3.03
										20	3.02
										26	3.00

Battery #30
Date: 3/10/53

300 amp Discharge						200 amp Discharge			100 amp Discharge		
OCV 6.38											
min	sec	volts	min	sec	volts	min	sec	volts	min	sec	volts
						6	06	Start	8	07	Start
0	02	4.90	5	35	3.42		10	3.90		10	4.25
	05	4.83		40	3.38		15	3.93		15	4.40
	10	4.83		45	3.32		20	3.98		20	4.48
	15	4.80		50	3.25		25	3.98		30	4.56
	20	4.78		55	3.19		30	3.98		40	4.58
	30	4.74	6	00	3.10		40	3.97		50	4.58
	40	4.71		05	3.01		50	3.90	9	00	4.60
	50	4.68		06	3.00		55	3.89		10	4.60
1	00	4.65				7	00	3.85		20	4.60
	10	4.62					05	3.82		30	4.58
	20	4.60					10	3.78		40	4.53
	30	4.57					15	3.72		50	4.50
	40	4.52					20	3.70	10	00	4.47
	50	4.50					25	3.61		10	4.43
2	00	4.48					30	3.60		20	4.40
	10	4.43					35	3.53		30	4.38
	20	4.41					40	3.48		40	4.33
	30	4.39					45	3.40		50	4.30
	40	4.35					50	3.33	11	00	4.23
	50	4.32					55	3.23		10	4.17
3	00	4.30				8	00	3.13		20	4.10
	10	4.27					05	3.02		30	4.00
	20	4.22					07	3.00		40	3.93
	30	4.20								50	3.82
	40	4.15							12	00	3.70
	50	4.12								05	3.60
4	00	4.09								10	3.52
	10	4.03								15	3.45
	20	3.99								20	3.33
	30	3.93								25	3.28
	35	3.91								30	3.21
	40	3.87								35	3.15
	45	3.86								40	3.09
	50	3.81								45	3.02
	55	3.79								47	3.00
5	00	3.76									
	05	3.70									
	10	3.68									
	15	3.62									
	20	3.60									
	25	3.56									
	30	3.50									
Watt hours		127.950						22.560			32.468

Battery #31
Date: 3/10/53

OCV 6.32

300 amp Discharge			200 amp Discharge			100 amp Discharge					
min	sec	volts	min	sec	volts	min	sec	volts	min	sec	volts
			1	58	Start	4	48	Start			
0	02	4.45	2	05	4.00		55	4.45	10	20	3.58
	05	4.20		15	4.00	5	00	4.50		25	3.52
	10	4.13		20	3.98		10	4.52		30	3.50
	15	4.07		25	3.98		20	4.55		35	3.47
	20	4.02		30	3.95		30	4.55		40	3.42
	30	3.92		35	3.93		40	4.55		45	3.40
	40	3.83		40	3.91		50	4.55		50	3.38
	50	3.76		45	3.89	6	00	4.53		55	3.32
1	00	3.68		50	3.88		10	4.51	11	00	3.30
	05	3.62		55	3.83		20	4.50		05	3.26
	10	3.59	3	00	3.80		30	4.48		10	3.23
	15	3.52		05	3.78		40	4.43		15	3.20
	20	3.47		10	3.75		50	4.40		20	3.18
	25	3.41		15	3.73	7	00	4.39		25	3.13
	30	3.37		20	3.70		10	4.37		30	3.09
	35	3.30		25	3.68		20	4.33		35	3.05
	40	3.22		30	3.67		30	4.30		38	3.00
	45	3.19		35	3.62		40	4.29			
	50	3.11		40	3.59		50	4.23			
	55	3.03		45	3.53	8	00	4.21			
	58	3.00		50	3.51		10	4.18			
				55	3.46		20	4.13			
			4	00	3.42		30	4.10			
				05	3.40		40	4.07			
				10	3.35		50	4.02			
				15	3.30	9	00	3.98			
				20	3.28		05	3.93			
				25	3.22		10	3.91			
				30	3.18		15	3.90			
				35	3.13		20	3.88			
				40	3.10		25	3.87			
				45	3.02		30	3.84			
				48	3.00		35	3.81			
							40	3.80			
							45	3.79			
							50	3.75			
							55	3.73			
						10	00	3.70			
							05	3.68			
							10	3.63			
							15	3.60			

Watt hours 35.970 32.987 45.930

Battery #32
Date: 3/10/55

300 amp Discharge

OCV 6.32

min	sec	volts
0	02	4.50
	05	4.38
	10	4.32
	15	4.29
	20	4.22
	30	4.18
	40	4.10
	50	4.03
1	00	3.95
	05	3.90
	10	3.88
	15	3.82
	20	3.75
	25	3.70
	30	3.65
	35	3.60
	40	3.53
	45	3.45
	50	3.41
	55	3.33
2	00	3.28
	05	3.20
	10	3.12
	15	3.06
	21	3.00

200 amp Discharge

min	sec	volts
2	21	Start
	25	3.97
	30	3.97
	35	3.97
	40	3.95
	45	3.93
	50	3.92
	55	3.91
3	00	3.90
	05	3.88
	10	3.86
	15	3.85
	20	3.83
	25	3.80
	30	3.78
	35	3.74
	40	3.72
	45	3.70
	50	3.68
	55	3.62
4	00	3.61
	05	3.58
	10	3.53
	15	3.50
	20	3.45
	25	3.40
	30	3.38
	35	3.32
	40	3.28
	45	3.23
	50	3.20
	55	3.15
5	00	3.12
	5	3.08
	10	3.03
	14	3.00

100 amp Discharge

min	sec	volts
5	14	Start
	15	4.40
	20	4.42
	30	4.46
	40	4.44
	50	4.43
6	00	4.42
	10	4.42
	20	4.41
	30	4.39
	40	4.36
	50	4.30
7	00	4.32
	10	4.30
	20	4.26
	30	4.22
	40	4.19
	50	4.13
8	00	4.10
	10	4.03
	20	3.98
	30	3.92
	35	3.90
	40	3.89
	45	3.87
	50	3.82
	55	3.75
9	00	3.73
	05	3.70
	10	3.63
	15	3.60
	20	3.59
	25	3.53
	30	3.50
	35	3.46
	40	3.42
	45	3.38
	50	3.33
	55	3.30
10	00	3.26
	05	3.20
	10	3.12
	15	3.06
	20	3.00

Watt hours 44.555 34.510 34.000

Table 4.4a. Charging data for June 1952 test batteries after 8 months storage.
Cycle 4: Charged for 24 hours at 5 amperes

TRAY Number 1

On Charge 6:00 a.m. 3/11/53

Battery	Cell	Time	Temperature	Specific Gravity	Volts
1T	1	Mar. 11	29.9	1.260	
	2	9:00 a.m.	30.1	1.267	
	3		30.0	1.245	
2T	1		30.5	1.246	
	2		30.2	1.252	
	3		29.7	1.258	
1T	1	11:45 a.m.	38.4	1.320	
	2		38.6	1.320	
	3		38.6	1.305	
2T	1		38.3	1.300	
	2		38.4	1.305	
	3		38.2	1.320	
1T	1	Mar. 12	39.3	1.325	
	2	5:05 p.m.	38.7	1.325	
	3		39.3	1.310	
2T	1		39.0	1.310	
	2		39.0	1.315	
	3		38.0	1.325	
1T	1	8:45 p.m.	34.5	1.320	2.13
	2		35.2	1.320	2.16
	3		35.0	1.300	2.13
2T	1		35.7	1.302	2.12
	2		35.2	1.306	2.13
	3		34.4	1.315	2.15

Off Charge 6:00 a.m. 3/12/53

TRAY Number 2

On Charge 6:00 a.m. 3/11/53

Battery	Cell	Time	Temperature	Specific Gravity	Volts
3U	1	Mar. 11	29.9	1.223	
	2	9:00 a.m.	30.0	1.227	
	3		30.4	1.215	
4U	1		30.0	1.223	
	2		30.0	1.227	
	3		30.0	1.217	
3U	1	11:45 a.m.	38.0	1.295	
	2		38.0	1.290	
	3		38.7	1.285	
4U	1		38.2	1.295	
	2		38.2	1.295	
	3		36.9	1.295	
3U	1	5:05 p.m.	38.3	1.305	
	2		38.7	1.295	
	3		39.3	1.285	
4U	1		39.7	1.300	
	2		38.7	1.300	
	3		37.3	1.300	
3U	1	8:45 p.m.	34.1	1.299	2.12
	2		35.0	1.292	2.12
	3		35.8	1.285	2.13
4U	1		35.4	1.302	2.13
	2		35.0	1.298	2.13
	3		34.4	1.296	2.14

Off Charge 6:00 a.m. 3/12/53

APPENDIX 2
Table 4.4a. Continued (sheet 3)

TRAY Number 3

On Charge 6:00 a.m. 3/11/53

Battery	Cell	Time	Temperature	Specific Gravity	Volts
5U	1	Mar. 11	29.7	1.240	
	2	9:00 a.m.	29.5	1.242	
	3		29.9	1.232	
6U	1		29.2	1.238	
	2		29.0	1.238	
	3		29.0	1.235	
5U	1	11:45 a.m.	37.6	1.295	
	2		38.3	1.300	
	3		38.4	1.295	
6U	1		38.0	1.300	
	2		38.6	1.305	
	3		36.1	1.300	
5U	1	5:05 p.m.	38.1	1.306	
	2		38.7	1.305	
	3		39.2	1.305	
6U	1		38.6	1.305	
	2		38.2	1.305	
	3		36.6	1.305	
5U	1	8:45 p.m.	34.0	1.307	2.14
	2		34.7	1.307	2.14
	3		30.3	1.302	2.13
6U	1		34.7	1.304	2.13
	2		34.5	1.308	2.14
	3		33.2	1.303	2.14

Off Charge 6:00 a.m. 3/12/53

APPENDIX 2.
Table 4.4a. Continued (sheet 4)

TRAY Number 6

On Charge 6:00 a.m. 3/11/53

Battery	Cell	Time	Temperature	Specific Gravity	Volts
11T	1	Mar. 11	29.0	1.220	
	2	9:00 a.m.	29.4	1.227	
	3		29.2	1.221	
12T	1		29.9	1.225	
	2		29.9	1.223	
	3		29.6	1.222	
11T	1	11:45 a.m.	36.2	1.290	
	2		37.1	1.300	
	3		37.4	1.285	
12T	1		38.3	1.295	
	2		38.0	1.300	
	3		37.1	1.300	
11T	1	5:05 p.m.	36.6	1.295	
	2		37.5	1.300	
	3		38.7	1.290	
12T	1		39.0	1.300	
	2		38.4	1.305	
	3		37.8	1.305	
11T	1	8:45 p.m.	34.0	1.292	2.12
	2		34.0	1.297	2.13
	3		34.8	1.289	2.11
12T	1		35.3	1.296	2.11
	2		34.8	1.298	2.12
	3		33.5	1.295	2.13

Off Charge 6:00 a.m. 3/12/53

TRAY Number 7

On Charge 6:00 a.m. 3/11/53

Battery	Cell	Time	Temperature	Specific Gravity	Volts
13T	1	Mar. 11	29.8	1.241	
	2	9:15 a.m.	29.8	1.242	
	3		29.9	1.247	
14T	1		30.3	1.244	
	2		30.2	1.242	
	3		29.6	1.245	
13T	1	11:55 a.m.	36.8	1.305	
	2		37.9	1.310	
	3		38.4	1.315	
14T	1		38.6	1.315	
	2		38.3	1.310	
	3		36.9	1.312	
13T	1	5:10 p.m.	37.7	1.305	
	2		39.6	1.310	
	3		39.3	1.320	
14T	1		39.6	1.315	
	2		38.8	1.315	
	3		37.9	1.320	
13T	1	9:00 p.m.	34.0	1.308	2.13
	2		35.1	1.312	2.13
	3		35.1	1.320	2.14
14T	1		35.5	1.320	2.14
	2		35.1	1.312	2.13
	3		33.9	1.315	2.14

Off Charge 6:00 a.m. 3/12/53

APPENDIX 2.
Table 4.4a. Continued (sheet 6)

TRAY Number 8

On Charge 6:00 a.m. 3/11/53

Battery	Cell	Time	Temperature	Specific Gravity	Volts
15U	1	Mar. 11	29.9	1.250	
	2	9:15 a.m.	30.0	1.220	
	3		30.5	1.218	
16U	1		30.1	1.220	
	2		30.0	1.212	
	3		30.0	1.223	
15U	1	11:55 a.m.	37.1	1.320	
	2		38.3	1.295	
	3		38.8	1.295	
16U	1		38.1	1.285	
	2		38.0	1.290	
	3		36.7	1.285	
15U	1	5:10 p.m.	38.4	1.325	
	2		39.2	1.305	
	3		39.5	1.300	
16U	1		39.3	1.290	
	2		38.8	1.295	
	3		37.0	1.295	
15U	1	9:00 p.m.	34.0	1.320	2.16
	2		35.0	1.300	2.13
	3		35.6	1.297	2.12
16U	1		34.9	1.290	2.12
	2		34.6	1.292	2.13
	3		33.3	1.292	2.13

Off Charge 6:00 a.m. 3/12/53

Table 4.4a. Continued (sheet 7)

TRAY Number 11

On Charge 6:00 a.m. 3/11/53

Battery	Cell	Time	Temperature	Specific Gravity	Volts
21T	1	Mar. 11	30.0	1.245	
	2	9:15 a.m.	30.1	1.242	
	3		30.0	1.235	
22M*	1		30.4	1.235	
	2		30.2	1.243	
	3		29.5	1.238	
21T	1	11:55 a.m.	37.0	1.310	
	2		38.0	1.310	
	3		37.7	1.305	
22M	1		38.1	1.295	
	2		37.6	1.305	
	3		36.1	1.305	
21T	1	5:10 p.m.	37.7	1.310	
	2		38.7	1.310	
	3		39.2	1.310	
22M	1		39.0	1.300	
	2		38.2	1.310	
	3		37.2	1.305	
21T	1	9:00 p.m.	33.8	1.307	2.13
	2		34.7	1.312	2.13
	3		35.1	1.307	2.13
22M	1		35.0	1.297	2.12
	2		34.4	1.308	2.13
	3		33.2	1.300	2.13

Off Charge 6:00 a.m. 3/12/53

* $MgSO_4$-Na_2SO_4

APPENDIX 2.
Table 4.4a. Continued (sheet 8)

TRAY Number 12

On Charge 6:00 a.m. 3/11/53

Battery	Cell	Time	Temperature	Specific Gravity	Volts
23T	1	Mar. 11	30.1	1.237	
	2	9:30 a.m.	30.4	1.245	
	3		30.0	1.240	
24U	1		30.4	1.220	
	2		30.0	1.228	
	3		30.0	1.225	
23T	1	12:25 p.m.	37.0	1.313	
	2		38.2	1.320	
	3		38.0	1.315	
24U	1		38.6	1.300	
	2		37.8	1.300	
	3		36.7	1.305	
23T	1	5:20 p.m.	38.0	1.315	
	2		38.8	1.325	
	3		39.5	1.315	
24U	1		39.3	1.300	
	2		39.0	1.305	
	3		38.0	1.310	
23T	1	9:05 p.m.	34.0	1.320	2.14
	2		34.8	1.325	2.14
	3		35.3	1.312	2.13
24U	1		35.1	1.300	2.13
	2		35.0	1.300	2.13
	3		34.0	1.305	2.14

Off Charge 6:00 a.m. 3/12/53

APPENDIX 2.
Table 4.4a Continued (sheet 9)

TRAY Number 14

On Charge 6:00 a.m. 3/11/53

Battery	Cell	Time	Temperature	Specific Gravity	Volts
27T	1	Mar. 11	29.6	1.218	
	2	9:30 a.m.	29.9	1.221	
	3		29.2	1.225	
28U	1		29.8	1.225	
	2		29.3	1.219	
	3		28.5	1.202	
27T	1	12:25 p.m.	36.4	1.295	
	2		37.0	1.305	
	3		37.8	1.297	
28U	1		37.8	1.290	
	2		36.9	1.290	
	3		35.4	1.280	
27T	1	5:20 p.m.	37.3	1.295	
	2		37.8	1.310	
	3		38.8	1.300	
28U	1		38.3	1.295	
	2		37.7	1.295	
	3		36.7	1.290	
27T	1	9:05 p.m.	33.4	1.290	2.12
	2		33.9	1.307	2.13
	3		34.8	1.297	2.12
28U	1		34.2	1.290	2.12
	2		33.9	1.290	2.12
	3		32.7	1.284	2.12

Off Charge 6:00 a.m. 3/12/53

APPENDIX 2.
Table 4.4a&1 , Continued (sheet 10)

TRAY Number 15

On Charge 6:00 a.m. 3/11/53

Battery	Cell	Time	Temperature	Specific Gravity	Volts
29U	1	Mar. 11	29.0	1.212	
	2	9:30 a.m.	29.5	1.216	
	3		30.2	1.206	
30T	1		30.7	1.234	
	2		30.2	1.232	
	3		30.0	1.228	
29U	1	12:25 p.m.	35.4	1.285	
	2		36.7	1.297	
	3		38.0	1.283	
30T	1		37.9	1.305	
	2		37.4	1.310	
	3		36.8	1.305	
29U	1	5:20 p.m.	36.8	1.295	
	2		37.8	1.300	
	3		39.0	1.285	
30T	1		39.2	1.315	
	2		38.7	1.315	
	3		37.7	1.305	
29U	1	9:05 p.m.	32.9	1.286	2.13
	2		34.3	1.296	2.13
	3		35.2	1.278	2.12
30T	1		35.0	1.307	2.13
	2		34.8	1.310	2.14
	3		34.1	1.298	2.13

Off Charge 6:00 a.m. 3/12/53

APPENDIX
Table 4.4a, Continued (sheet 11)

TRAY Number 16

On Charge 6:00 a.m. 3/11/53

Battery	Cell	Time	Temperature	Specific Gravity	Volts
31U	1	Mar. 11	29.8	1.230	
	2	9:30a.m.	30.1	1.232	
	3		30.8	1.240	
32T	1		30.5	1.249	
	2		30.2	1.250	
	3		29.5	1.260	
31U	1	12:25 p.m.	37.0	1.283	
	2		38.4	1.285	
	3		38.4	1.290	
32T	1		38.7	1.305	
	2		38.4	1.303	
	3		36.8	1.315	
31U	1	5:20p.m.	38.0	1.290	
	2		39.0	1.290	
	3		39.5	1.285	
32T	1		39.8	1.305	
	2		38.8	1.305	
	3		37.3	1.320	
31U	1	9:05 p.m.	33.8	1.283	2.12
	2		35.0	1.287	2.12
	3		36.0	1.287	2.13
32T	1		35.5	1.300	2.12
	2		34.6	1.300	2.12
	3		34.0	1.317	2.13

Off Charge 6:00 a.m. 3/12/53

APPENDIX 2

Table A.4b -Discharge data, 4th cycle

Battery 1
12 March 1953

Discharge rate 300 amp			Discharge rate 200 amp			Discharge rate 100 amp					
OCV 6.42											
min	sec	volts	min	sec	volts	min	sec	volts	min	sec	volts
			3	57	Start	6	56	Start	13	00	3.70
0	02	4.60	4	00	3.98	7	00	4.50		05	3.68
	05	4.52		05	4.00		05	4.48		10	3.64
	10	4.48		10	3.99		10	4.50		15	3.62
	15	4.43		15	4.00		20	4.51		20	3.61
	20	4.41		20	4.00		30	4.51		25	3.60
	30	4.38		25	3.99		40	4.52		30	3.59
	40	4.32		30	3.99		50	4.52		35	3.58
	50	4.27		35	3.96	8	00	4.51		40	3.57
1	00	4.21		40	3.93		10	4.50		45	3.54
	10	4.16		45	3.91		20	4.50		50	3.52
	20	4.10		50	3.88		30	4.48	13	55	3.50
	30	4.06		55	3.86		40	4.48	14	00	3.49
	40	4.01	5	00	3.83		50	4.44		05	3.48
	50	3.96		05	3.80	9	00	4.42		10	3.46
2	00	3.89		10	3.78		10	4.40		15	3.42
	05	3.82		15	3.76		20	4.39		20	3.40
	10	3.79		20	3.72		30	4.37		25	3.38
	15	3.78		25	3.69		40	4.32		30	3.37
	20	3.75		30	3.66		50	4.30		35	3.33
	25	3.73		35	3.62	10	00	4.27		40	3.32
	30	3.69		40	3.60		10	4.23		45	3.31
	35	3.68		45	3.56		20	4.21		50	3.30
	40	3.64		50	3.52		30	4.20		55	3.28
	45	3.62		55	3.50		40	4.17	15	00	3.26
	50	3.59	6	00	3.44		50	4.13		05	3.24
	55	3.53		05	3.42	11	00	4.10		10	3.22
3	00	3.51		10	3.39		10	4.08		15	3.20
	05	3.48		15	3.36		20	4.03		20	3.17
	10	3.42		20	3.31		30	4.00		25	3.16
	15	3.39		25	3.27		40	3.97		30	3.14
	20	3.33		30	3.22		50	3.93		35	3.11
	25	3.30		35	3.20	12	00	3.90		40	3.09
	30	3.26		40	3.15		10	3.88		45	3.07
	35	3.21		45	3.11		20	3.84		50	3.03
	40	3.18		50	3.08		30	3.79		55	3.02
	45	3.14		55	3.02		40	3.76	16	00	3.00
	50	3.09		56	3.00		50	3.72			
	55	3.04									
	57	3.00									
Watt hours		76.165			36.026						59.455

Battery 2
12 March 1953

Discharge rate
300 amp

CCV 6.41

Min.	Sec.	Volts	Min.	Sec.	Volts
0	2	4.70	3	20	3.77
0	5	4.60	3	25	3.73
0	10	4.57	3	30	3.71
0	15	4.52	3	35	3.69
0	20	4.51	3	40	3.67
0	30	4.48	3	45	3.63
0	40	4.42	3	50	3.60
0	50	4.40	3	55	3.59
1	00	4.33	4	00	3.56
1	10	4.30	4	5	3.52
1	20	4.28	4	10	3.50
1	30	4.22	4	15	3.47
1	40	4.19	4	20	3.43
1	50	4.13	4	25	3.40
2	00	4.10	4	30	3.37
2	10	4.06	4	35	3.32
2	20	4.00	4	40	3.30
2	30	3.98	4	45	3.27
2	40	3.94	4	50	3.22
2	50	3.90	4	55	3.19
3	00	3.87	5	00	3.14
3	5	3.82	5	5	3.10
3	10	3.80	5	10	3.06
3	15	3.79	5	13	3.00

Discharge rate
200 amp

Min.	Sec.	Volts
5	13	Start
5	15	4.00
5	20	3.98
5	25	3.98
5	30	3.99
5	35	3.99
5	40	3.99
5	45	3.98
5	50	3.97
5	55	3.95
6	00	3.92
6	5	3.90
6	10	3.89
6	15	3.87
6	20	3.84
6	25	3.81
6	30	3.80
6	35	3.78
6	40	3.72
6	45	3.70
6	50	3.68
6	55	3.66
7	00	3.62
7	5	3.59
7	10	3.56
7	15	3.50
7	20	3.48
7	25	3.43
7	30	3.40
7	35	3.38
7	40	3.32
7	45	3.29
7	50	3.22
7	55	3.19
8	00	3.12
8	5	3.09
8	10	3.03
8	13	3.00

Discharge rate
100 amp

Min.	Sec.	Volts
8	13	Start
8	15	4.40
8	20	4.46
8	30	4.48
8	40	4.50
8	50	4.50
9	00	4.50
9	10	4.50
9	20	4.50
9	30	4.50
9	40	4.49
9	50	4.47
10	00	4.46
10	10	4.43
10	20	4.41
10	30	4.40
10	40	4.37
10	50	4.32
11	00	4.30
11	10	4.26
11	20	4.23
11	30	4.20
11	40	4.18
11	50	4.16
12	00	4.12
12	10	4.10
12	20	4.08
12	30	4.04
12	40	4.02
12	50	4.00
13	00	3.96
13	10	3.92
13	20	3.89
13	30	3.86
13	40	3.81
13	50	3.78
14	00	3.72
14	5	3.70

Battery 2
Continued on next page

APPENDIX 2
Table 4.4b (Sheet 3)

Battery 2 (continued)

	Discharge rate 300 amp	Discharge rate 200 amp	Discharge rate 100 amp	
			Min. Sec.	Volts
			14 10	3.68
			14 15	3.66
			14 20	3.62
			14 25	3.60
			14 30	3.58
			14 35	3.56
			14 40	3.53
			14 45	3.51
			14 50	3.49
			14 55	3.46
			15 00	3.42
			15 5	3.40
			15 10	3.38
			15 15	3.33
			15 20	3.31
			15 25	3.30
			15 30	3.28
			15 35	3.26
			15 40	3.22
			15 45	3.20
			15 50	3.18
			15 55	3.15
			16 00	3.12
			16 5	3.10
			16 10	3.06
			16 15	3.03
			16 20	3.02
			16 24	3.00
Watt Hrs.	102.055	36.470		54.244

APPENDIX 2
Table 4.4b (Sheet 4)

Battery 3
12 March 1953

Discharge rate 300 amp						Discharge rate 200 amp			Discharge rate 100 amp		
OCV 6.37											
Min.	Sec.	Volts	Min.	Sec.	Volts	Min.	Sec.	Volts	Min.	Sec.	Volts
0	2	4.70	4	00	4.08	6	50	Start	9	00	Start
0	5	4.74	4	10	4.02	6	55	3.38	9	5	4.25
0	10	4.71	4	20	4.00	7	00	3.92	9	10	4.38
0	15	4.70	4	30	3.98	7	10	3.96	9	20	4.50
0	20	4.68	4	40	3.93	7	20	3.92	9	30	4.48
0	30	4.63	4	50	3.89	7	30	3.90	9	40	4.48
0	40	4.61	5	00	3.86	7	40	3.85	9	50	4.48
0	50	4.58	5	10	3.81	7	50	3.76	10	00	4.48
1	00	4.55	5	20	3.74	8	00	3.68	10	10	4.44
1	10	4.52	5	30	3.70	8	5	3.62	10	20	4.42
1	20	4.50	5	35	3.68	8	10	3.60	10	30	4.39
1	30	4.48	5	40	3.62	8	15	3.54	10	40	4.32
1	40	4.46	5	45	3.60	8	20	3.50	10	50	4.30
1	50	4.42	5	50	3.58	8	25	3.44	11	00	4.26
2	00	4.40	5	55	3.53	8	30	3.40	11	10	4.20
2	10	4.38	6	00	3.50	8	35	3.33	11	20	4.14
2	20	4.36	6	5	3.47	8	40	3.30	11	30	4.10
2	30	4.32	6	10	3.42	8	45	3.22	11	40	4.05
2	40	4.30	6	15	3.38	8	50	3.16	11	50	4.00
2	50	4.28	6	20	3.32	8	55	3.10	12	00	3.90
3	00	4.24	6	25	3.30	9	00	3.00	12	5	3.86
3	10	4.22	6	30	3.23				12	10	3.82
3	20	4.20	6	35	3.18				12	15	3.78
3	30	4.17	6	40	3.13				12	20	3.70
3	40	4.12	6	45	3.10				12	25	3.64
3	50	4.10	6	50	3.00				12	30	3.60
									12	35	3.52
									12	40	3.44
									12	45	3.38
									12	50	3.30
									12	55	3.26
									13	00	3.18
									13	5	3.12
									13	10	3.08
									13	13	3.00
Watt Hrs.		140.010				26.191					28.502

Battery 4
12 March 1953

Discharge rate 300 amp						Discharge rate 200 amp			Discharge rate 100 amp		
OCV 6.40											
Min.	Sec.	Volts	Min.	Sec.	Volts	Min.	Sec.	Volts	Min.	Sec.	Volts
0	2	4.48	4	35	3.28	5	8	Start	8	5	Start
0	5	4.43	4	40	3.24	5	10	3.92	8	10	4.48
0	10	4.41	4	45	3.20	5	15	3.98	8	20	4.50
0	15	4.40	4	50	3.16	5	20	3.99	8	30	4.52
0	20	4.38	4	55	3.10	5	30	4.00	8	40	4.52
0	30	4.32	5	00	3.08	5	40	3.98	8	50	4.52
0	40	4.30	5	5	3.03	5	50	3.96	9	00	4.52
0	50	4.26	5	8	3.00	6	00	3.90	9	10	4.53
1	00	4.20				6	10	3.88	9	20	4.53
1	10	4.18				6	20	3.82	9	30	4.53
1	20	4.16				6	30	3.78	9	40	4.51
1	30	4.10				6	40	3.70	9	50	4.49
1	40	4.08				6	45	3.68	10	00	4.49
1	50	4.06				6	50	3.66	10	10	4.47
2	00	4.00				6	55	3.64	10	20	4.42
2	10	3.98				7	00	3.60	10	30	4.41
2	20	3.96				7	5	3.58	10	40	4.40
2	30	3.90				7	10	3.54	10	50	4.38
2	40	3.88				7	15	3.51	11	00	4.34
2	50	3.83				7	20	3.48	11	10	4.30
3	00	3.80				7	25	3.44	11	20	4.28
3	10	3.76				7	30	3.40	11	30	4.26
3	20	3.71				7	35	3.38	11	40	4.22
3	30	3.66				7	40	3.32	11	50	4.20
3	35	3.62				7	45	3.25	12	00	4.18
3	40	3.60				7	50	3.19	12	10	4.13
3	45	3.59				7	55	3.13	12	20	4.10
3	50	3.56				8	00	3.07	12	30	4.08
3	55	3.53				8	5	3.00	12	40	4.02
4	00	3.50							12	50	4.00
4	5	3.48							13	00	3.94
4	10	3.46							13	10	3.88
4	15	3.42							13	20	3.82
4	20	3.40							13	30	3.76
4	25	3.38							13	40	3.68
4	30	3.32							13	50	3.60

Battery 4 continued on next page.

APPENDIX 2
Table 4.4b (Sheet 6)

Battery 4 (Continued)

Discharge rate 300 amp	Discharge rate 200 amp	Discharge rate 100 amp		
		min	sec	volts
		14	00	3.53
		14	5	3.50
		14	10	3.46
		14	15	3.42
		14	20	3.38
		14	25	3.36
		14	30	3.30
		14	35	3.28
		14	40	3.23
		14	45	3.20
		14	50	3.13
		14	55	3.10
		15	00	3.07
		15	5	3.00
Watt hours 98.635	36.090			47.726

APPENDIX 2
Table 4.4b (Sheet 7)

Battery 5
12 March 1953

OCV 6.40

Discharge rate 300 amp						Discharge rate 200 amp			Discharge rate 100 amp		
Min.	Sec.	Volts	Min.	Sec.	Volts	Min.	Sec.	Volts	Min.	Sec.	Volts
0	2	4.44	3	35	3.54	5	3	start	8	15	start
	5	4.40		40	3.52	5	5	3.95	8	20	4.38
	10	4.36		45	3.50		10	3.98		30	4.48
	15	4.30		50	3.48		20	3.99		40	4.50
	20	4.28		55	3.46		30	3.98		50	4.51
	30	4.22	4	00	3.42		40	3.97	9	00	4.51
	40	4.18		5	3.39		50	3.95		10	4.51
	50	4.13		10	3.37	6	00	3.92		20	4.51
1	00	4.10		15	3.34		10	3.90		30	4.50
	10	4.06		20	3.31		20	3.86		40	4.50
	20	4.02		25	3.29		30	3.80		50	4.50
	30	4.00		30	3.26		40	3.75	10	00	4.48
	40	3.98		35	3.21		50	3.68		10	4.44
	50	3.94		40	3.19	7	00	3.63		20	4.42
2	00	3.90		45	3.16		5	3.60		30	4.38
	10	3.88		50	3.12		10	3.58		40	4.33
	20	3.84		55	3.10		15	3.54		50	4.30
	30	3.80	5	00	3.05		20	3.51	11	00	4.27
	40	3.76		3	3.00		25	3.48		10	4.22
	50	3.72					30	3.42		20	4.18
3	00	3.70					35	3.39		30	4.13
	10	3.66					40	3.36		40	4.10
	20	3.62					45	3.30		50	4.05
	30	3.58					50	3.28	12	00	4.00
							55	3.22		10	3.95
						8	00	3.18		20	3.88
							5	3.13		30	3.81
							10	3.08		40	3.72
							15	3.00		50	3.61
										55	3.54
									13	00	3.48
										5	3.38
										10	3.25
										15	3.14
										20	3.02
										21	3.00
Watt hours				95.030				39.149			35.395

APPENDIX 2
Table 4.4b (Sheet 8)

Battery 6
12 March 1953

Discharge rate 300 amp			Discharge rate 200 amp			Discharge rate 100 amp		
OCV 6.40								
Min.	Sec.	Volts	Min.	Sec.	Volts	Min.	Sec.	Volts
0	2	4.68	4	45	3.40	5	38	Start
0	5	4.50	4	50	3.39	5	40	3.92
0	10	4.42	4	55	3.36	5	45	3.98
0	15	4.40	5	00	3.32	5	50	4.00
0	20	4.38	5	5	3.30	6	00	3.99
0	30	4.31	5	10	3.27	6	10	3.96
0	40	4.28	5	15	3.22	6	20	3.92
0	50	4.24	5	20	3.20	6	30	3.89
1	00	4.20	5	25	3.13	6	40	3.83
1	10	4.18	5	30	3.10	6	50	3.79
1	20	4.16	5	35	3.05	7	00	3.72
1	30	4.12	5	38	3.00	7	10	3.68
1	40	4.10				7	20	3.64
1	50	4.08				7	25	3.57
2	00	4.04				7	30	3.53
2	10	4.02				7	35	3.50
2	20	4.00				7	40	3.47
2	30	3.97				7	45	3.40
2	40	3.92				7	50	3.37
2	50	3.90				7	55	3.32
3	00	3.88				8	00	3.28
3	10	3.83				8	5	3.21
3	20	3.80				8	10	3.18
3	30	3.77				8	15	3.10
3	40	3.72				8	20	3.02
3	50	3.68				8	21	3.00
4	00	3.63						
4	5	3.61						
4	10	3.60						
4	15	3.59						
4	20	3.56						
4	25	3.53						
4	30	3.50						
4	35	3.47						
4	40	3.43						
						8	21	Start
						8	25	4.30
						8	30	4.42
						8	40	4.50
						8	50	4.51
						9	00	4.52
						9	10	4.52
						9	20	4.52
						9	30	4.51
						9	40	4.50
						9	50	4.50
						10	00	4.48
						10	10	4.45
						10	20	4.42
						10	30	4.38
						10	40	4.30
						10	50	4.28
						11	00	4.22
						11	10	4.20
						11	20	4.12
						11	30	4.09
						11	40	4.03
						11	50	3.98
						12	00	3.90
						12	10	3.82
						12	20	3.70
						12	25	3.66
						12	30	3.61
						12	35	3.58
						12	40	3.50
						12	45	3.48
						12	50	3.41
						12	55	3.35
						13	00	3.30
						13	5	3.28
						13	10	3.20
						13	15	3.14
						13	20	3.09
						13	25	3.03
						13	27	3.00
Watt hours		108.520			33.150			34.740

APPENDIX 2
Table 4.4b (Sheet 9)

Battery 11
12 March 1953

Discharge rate 300 amp

OCV 6.34

Min.	Sec.	Volts
0	2	4.60
0	5	4.57
0	10	4.53
0	15	4.51
0	20	4.50
0	30	4.48
0	40	4.42
0	50	4.40
1	00	4.34
1	10	4.30
1	20	4.28
1	30	4.21
1	40	4.18
1	50	4.13
2	00	4.10
2	10	4.07
2	20	4.00
2	30	3.98
2	40	3.92
2	50	3.88
3	00	3.82
3	10	3.79
3	20	3.70
3	30	3.65
3	35	3.62
3	40	3.59
3	45	3.57
3	50	3.53
3	55	3.50
4	00	3.48
4	5	3.40
4	10	3.38
4	15	3.32
4	20	3.29
4	25	3.26
4	30	3.20
4	35	3.16
4	40	3.12
4	45	3.04
4	47	3.00

Discharge rate 200 amp

Min.	Sec.	Volts
4	47	Start
4	50	3.95
4	55	3.98
5	00	3.99
5	10	3.99
5	20	3.95
5	30	3.91
5	40	3.88
5	50	3.82
6	00	3.79
6	10	3.71
6	20	3.68
6	30	3.60
6	35	3.57
6	40	3.52
6	45	3.49
6	50	3.47
6	55	3.43
7	00	3.40
7	5	3.37
7	10	3.30
7	15	3.23
7	20	3.23
7	25	3.20
7	30	3.15
7	35	3.10
7	40	3.05
7	43	3.00

Discharge rate 100 amp

Min.	Sec.	Volts
7	43	Start
7	45	4.30
7	50	4.40
7	55	4.46
8	00	4.48
8	10	4.50
8	20	4.50
8	30	4.50
8	40	4.50
8	50	4.50
9	00	4.50
9	10	4.50
9	20	4.49
9	30	4.48
9	40	4.46
9	50	4.42
10	00	4.40
10	10	4.38
10	20	4.35
10	30	4.30
10	40	4.28
10	50	4.26
11	00	4.22
11	10	4.20
11	20	4.18
11	30	4.16
11	40	4.13
11	50	4.10
12	00	4.08
12	10	4.03
12	20	4.00
12	30	3.96
12	40	3.93
12	50	3.90
13	00	3.85
13	10	3.81
13	20	3.78
13	30	3.73
13	40	3.70
13	50	3.68

Min.	Sec.	Volts
14	00	3.63
14	5	3.61
14	10	3.60
14	15	3.58
14	20	3.56
14	25	3.55
14	30	3.53
14	35	3.52
14	40	3.50
14	45	3.49
14	50	3.45
14	55	3.42
15	00	3.42
15	5	3.40
15	10	3.39
15	15	3.38
15	20	3.37
15	25	3.35
15	30	3.33
15	35	3.30
15	40	3.29
15	45	3.27
15	50	3.25
15	55	3.23
16	00	3.20
16	5	3.18
16	10	3.15
16	15	3.13
16	20	3.10
16	25	3.08
16	30	3.07
16	35	3.03
16	37	3.00

Watt hours 94.300 35.480 58.567

Battery 12
3 March 1953

Discharge rate 300 amp			Discharge rate 200 amp			Discharge rate 100 amp		
OCV 6.36								
Min	Sec	Volts	Min	Sec	Volts	Min	Sec	Volts
0	2	4.88	4	20	4.10	6	58	Start
0	5	4.84	4	30	4.08	7	00	3.88
0	10	4.82	4	40	4.02	7	5	3.92
0	15	4.80	4	50	4.00	7	10	3.95
0	20	4.79	5	00	3.98	7	20	3.95
0	30	4.75	5	10	3.91	7	30	3.92
0	40	4.72	5	20	3.87	7	40	3.90
0	50	4.70	5	30	3.80	7	50	3.85
1	00	4.68	5	40	3.75	8	00	3.78
1	10	4.63	5	50	3.69	8	5	3.72
1	20	4.60	5	55	3.65	8	10	3.69
1	30	4.58	6	00	3.60	8	15	3.62
1	40	4.54	6	5	3.58	8	20	3.58
1	50	4.52	6	10	3.55	8	25	3.52
2	00	4.50	6	15	3.50	8	30	3.47
2	10	4.49	6	20	3.46	8	35	3.40
2	20	4.47	6	25	3.40	8	40	3.33
2	30	4.43	6	30	3.37	8	45	3.28
2	40	4.41	6	35	3.32	8	50	3.20
2	50	4.39	6	40	3.28	8	55	3.14
3	00	4.37	6	45	3.19	9	00	3.08
3	10	4.32	6	50	3.15	9	3	3.00
3	20	4.30	6	55	3.08			
3	30	4.27	6	58	3.00			
3	40	4.23						
3	50	4.20						
4	00	4.18						
4	10	4.13						
						9	3	Start
						9	10	4.25
						9	15	4.38
						9	20	4.40
						9	30	4.48
						9	40	4.48
						9	50	4.49
						10	00	4.50
						10	10	4.50
						10	20	4.49
						10	30	4.48
						10	40	4.46
						10	50	4.42
						11	00	4.40
						11	10	4.37
						11	20	4.30
						11	30	4.25
						11	40	4.18
						11	50	4.08
						12	00	3.98
						12	5	3.92
						12	10	3.88
						12	15	3.85
						12	20	3.80
						12	25	3.76
						12	30	3.71
						12	35	3.69
						12	40	3.66
						12	45	3.63
						12	50	3.61
						12	55	3.59
						13	00	3.57

Battery 12 continued on next page.

APPENDIX 2
Table 4.4b (Sheet 11)

Battery 12 (Continued)

Discharge rate 300 amp	Discharge rate 200 amp	Discharge rate 100 amp		
		Min	Sec	Volts
		13	5	3.53
		13	10	3.54
		13	15	3.53
		13	20	3.51
		13	25	3.50
		13	30	3.50
		13	35	3.49
		13	40	3.48
		13	45	3.46
		13	50	3.43
		13	55	3.40
		14	00	3.39
		14	5	3.36
		14	10	3.30
		14	15	3.22
		14	20	3.18
		14	25	3.00
Watt hours 145.760	25.381			35.699

Battery 13
12 March 1953

Discharge rate 300 amp						Discharge rate 200 amp			Discharge rate 100 amp		
OCV 6.40											
min	sec	volts	min	sec	volts	min	sec	volts	min	sec	volts
0	2	4.75	4	00	3.82	6	12	Start	8	25	Start
	5	4.60		10	3.80		15	3.90		30	4.35
	10	4.55		20	3.73		20	3.92		35	4.42
	15	4.52		30	3.69		30	3.90		40	4.44
	20	4.50		40	3.65		40	3.90		50	4.48
	30	4.45		50	3.60		50	3.88	9	00	4.50
	40	4.42	5	00	3.55	7	00	3.82		10	4.50
	50	4.38		10	3.50		10	3.75		20	4.50
1	00	4.37		20	3.42		20	3.69		30	4.50
	10	4.32		30	3.38		30	3.60		40	4.49
	20	---		35	3.30		40	3.52		50	4.47
	30	4.27		40	3.28		50	3.42	10	00	4.44
	40	4.22		45	3.23	8	00	3.32		10	4.42
	50	4.20		50	3.20		5	3.28		20	4.39
2	00	4.18		55	3.17		10	3.20		30	4.35
	10	4.15	6	00	3.13		15	3.14		40	4.30
	20	4.12		5	3.08		20	3.08		50	4.24
	30	4.10		10	3.01		25	3.00	11	00	4.18
	40	4.08		12	3.00					10	4.10
	50	4.04								20	4.00
3	00	4.02								30	3.93
	10	3.99								40	3.89
	20	3.95								50	3.80
	30	3.92							12	00	3.72
	40	3.89								5	3.70
	50	3.86								10	3.65
										15	3.60
										20	3.58
										25	3.50
										30	3.48
										35	3.42
										40	3.38
										45	3.33
										50	3.26
										55	3.20
									13	00	3.12
										5	3.02
										6	3.00
Watt hours				122.030			26.674				31.788

APPENDIX 2
Table 4.4b (Sheet 13)

Battery 14
12 March 53

Discharge rate 300 amp			Discharge rate 200 amp			Discharge rate 100 amp		
OCV 6.40								
Min.	Sec.	Volts	Min.	Sec.	Volts	Min.	Sec.	Volts
0	2	4.70	5	00	3.61	6	24	Start
0	5	4.62	5	5	3.59	6	30	3.90
0	10	4.60	5	10	3.56	6	35	3.93
0	15	4.56	5	15	3.53	6	40	3.93
0	20	4.53	5	20	3.50	6	50	3.91
0	30	4.50	5	25	3.48	7	00	3.90
0	40	4.47	5	30	3.43	7	10	3.84
0	50	4.42	5	35	3.40	7	15	3.80
1	00	4.40	5	40	3.39	7	20	3.79
1	10	4.38	5	45	3.33	7	25	3.75
1	20	4.34	5	50	3.30	7	30	3.72
1	30	4.31	5	55	3.28	7	35	3.69
1	40	4.29	6	00	3.23	7	40	3.65
1	50	4.25	6	5	3.20	7	45	3.61
2	00	4.22	6	10	3.15	7	50	3.59
2	10	4.20	6	15	3.10	7	55	3.53
2	20	4.18	6	20	3.04	8	00	3.51
2	30	4.13	6	24	3.00	8	5	3.44
2	40	4.11				8	10	3.40
2	50	4.10				8	15	3.33
3	00	4.06				8	20	3.28
3	10	4.03				8	25	3.22
3	20	4.00				8	30	3.18
3	30	3.98				8	35	3.10
3	40	3.92				8	40	3.03
3	50	3.89				8	42	3.00
4	00	3.88						
4	10	3.83						
4	20	3.79						
4	30	3.73						
4	40	3.70						
4	50	3.67						
						8	42	Start
						8	45	4.25
						8	50	4.35
						8	55	4.40
						9	00	4.43
						9	10	4.47
						9	20	4.48
						9	30	4.48
						9	40	4.48
						9	50	4.46
						10	00	4.43
						10	10	4.41
						10	20	4.39
						10	30	4.33
						10	40	4.28
						10	50	4.21
						11	00	4.19
						11	10	4.12
						11	20	4.06
						11	30	3.99
						11	40	3.90
						11	50	3.81
						12	00	3.71
						12	5	3.63
						12	10	3.58
						12	15	3.50
						12	20	3.43
						12	25	3.38
						12	30	3.28
						12	35	3.21
						12	40	3.10
						12	46	3.00
Watt hours		126.805			27.661			27.711

APPENDIX 2
Table 4.4b (Sheet 14)

Battery #15
12 March 1953

	Discharge rate 300 amp				Discharge rate 200 amp		Discharge rate 100 amp	
OCV.	6.42							
min	sec	volts	min	sec	volts	min sec	volts	min sec	volts
0	02	4.90	3	30	4.23	6 52	Start	7 55	Start
	05	4.82		40	4.22	6 55	3.90	8 00	4.55
	10	4.78		50	4.19	7 00	3.93	05	4.65
	15	4.76	4	00	4.17	05	3.93	10	4.70
	20	4.73		10	4.13	10	3.90	20	4.77
	30	4.71		20	4.10	20	3.80	30	4.80
	40	4.69		30	4.09	30	3.70	40	4.82
	50	4.63		40	4.04	35	3.60	50	4.83
1	00	4.61		50	4.02	40	3.50	9 00	4.84
	10	4.59	5	00	3.99	45	3.35	10	4.83
	20	4.54		10	3.93	50	3.18	20	4.82
	30	4.51		20	3.90	55	3.00	30	4.81
	40	4.48		30	3.88			40	4.80
	50	4.47		40	3.81			50	4.73
2	00	4.44		50	3.74			10 00	4.70
	10	4.42	6	00	3.69			10	4.61
	20	4.40		10	3.61			20	4.50
	30	4.39		20	3.51			30	4.38
	40	4.36		30	3.40			40	4.10
	50	4.33		35	3.33			50	3.88
3	00	4.31		40	3.27			55	3.78
	10	4.29		45	3.16			11 00	3.69
	20	4.28		50	3.03			05	3.60
				52	3.00			10	3.50
								15	3.43
								20	3.35
								25	3.29
								30	3.23
								35	3.19
								40	3.11
								45	3.05
								49	3.00
Watt hours		143.715			12.787				28.115

Battery 16
12 March 1953

Discharge rate 300 amp						Discharge rate 200 amp			Discharge rate 100 amp		
OCV 6.37											
Min.	Sec.	Volts	Min.	Sec.	Volts	Min.	Sec.	Volts	Min.	Sec.	Volts
0	2	4.95	5	00	4.18	7	13	Start	8	31	Start
0	5	4.90	5	10	4.13	7	15	3.90	8	35	4.35
0	10	4.90	5	20	4.10	7	20	3.93	8	40	4.50
0	15	4.89	5	30	4.08	7	25	3.97	8	45	4.55
0	20	4.88	5	40	4.03	7	30	3.97	8	50	4.60
0	30	4.84	5	50	3.95	7	40	3.90	9	00	4.62
0	40	4.82	6	00	3.92	7	45	3.85	9	10	4.66
0	50	4.79	6	5	3.89	7	50	3.80	9	20	4.68
1	00	4.77	6	10	3.86	7	55	3.72	9	30	4.68
1	10	4.74	6	15	3.82	8	00	3.63	9	40	4.65
1	20	4.72	6	20	3.78	8	5	3.58	9	50	4.62
1	30	4.70	6	25	3.73	8	10	3.48	10	00	4.60
1	40	4.68	6	30	3.70	8	15	3.40	10	10	4.58
1	50	4.65	6	35	3.66	8	20	3.31	10	20	4.50
2	00	4.63	6	40	3.60	8	25	3.20	10	30	4.43
2	10	4.60	6	45	3.53	8	30	3.03	10	40	4.40
2	20	4.59	6	50	3.48	8	31	3.00	10	50	4.30
2	30	4.57	6	55	3.39				11	00	4.20
2	40	4.53	7	00	3.31				11	10	4.10
2	50	4.51	7	5	3.20				11	20	4.00
3	00	4.50	7	10	3.10				11	30	3.89
3	10	4.48	7	13	3.00				11	35	3.81
3	20	4.43							11	40	3.72
3	30	4.42							11	45	3.69
3	40	4.40							11	50	3.59
3	50	4.39							12	00	3.49
4	00	4.36							12	5	3.42
4	10	4.33							12	10	3.39
4	20	4.30							12	15	3.32
4	30	4.28							12	20	3.22
4	40	4.23							12	25	3.12
4	50	4.20							12	30	3.02
									12	32	3.00
Watt hours					156.055			15.877			28.051

APPENDIX 2
Table 4.4b (Sheet 16)

Battery 21
12 March 1953

Discharge rate 300 amp			Discharge rate 200 amp			Discharge rate 100 amp		
OCV 6.36								
Min.	Sec.	Volts	Min.	Sec.	Volts	Min.	Sec.	Volts
0	2	4.89	4	30	4.20	7	7	Start
0	5	4.87	4	40	4.17	7	10	3.82
0	10	4.85	4	50	4.12	7	15	3.90
0	15	4.84	5	00	4.09	7	20	3.90
0	20	4.83	5	10	4.06	7	30	3.84
0	30	4.82	5	20	4.01	7	40	3.73
0	40	4.80	5	30	3.93	7	50	3.61
0	50	4.78	5	40	3.92	8	00	3.50
1	00	4.74	5	50	3.87	8	5	3.42
1	10	4.72	6	00	3.80	8	10	3.32
1	20	4.70	6	5	3.78	8	15	3.20
1	30	4.67	6	10	3.73	8	19	3.00
1	40	4.64	6	15	3.70			
1	50	4.61	6	20	3.67			
2	00	4.59	6	25	3.61			
2	10	4.58	6	30	3.55			
2	20	4.54	6	35	3.50			
2	30	4.50	6	40	3.44			
2	40	4.49	6	45	3.39			
2	50	4.46	6	50	3.30			
3	00	4.44	6	55	3.21			
3	10	4.42	7	00	3.14			
3	20	4.40	7	5	3.05			
3	30	4.38	7	7	3.00			
3	40	4.35						
3	50	4.32						
4	00	4.29						
4	10	4.27						
4	20	4.23						
8	19	Start						
8	25	4.40						
8	30	4.48						
8	40	4.55						
8	50	4.58						
9	00	4.58						
9	10	4.56						
9	20	4.53						
9	30	4.50						
9	40	4.44						
9	50	4.38						
10	00	4.30						
10	10	4.25						
10	20	4.18						
10	30	4.10						
10	40	3.98						
10	50	3.75						
11	00	3.60						
11	5	3.50						
11	10	3.40						
11	15	3.30						
11	20	3.25						
11	25	3.18						
11	30	3.10						
11	35	3.00						
Watt hours		152.120			14.490			22.413

APPENDIX 2
Table 4.4b (Sheet 17)

Battery 22
12 March 1953

Discharge rate 300 amp			Discharge rate 200 amp			Discharge rate 100 amp		
OCV 6.37								
Min.	Sec.	Volts	Min.	Sec.	Volts	Min.	Sec.	Volts
0	2	4.90	4	00	4.18	6	50	Start
0	5	4.80	4	10	4.16	6	55	3.85
0	10	4.80	4	20	4.12	7	00	3.90
0	15	4.80	4	30	4.09	7	5	3.90
0	20	4.79	4	40	4.05	7	10	3.88
0	30	4.76	4	50	4.01	7	15	3.84
0	40	4.72	5	00	3.98	7	20	3.80
0	50	4.70	5	10	3.92	7	25	3.74
1	00	4.66	5	20	3.90	7	30	3.70
1	10	4.63	5	30	3.82	7	35	3.65
1	20	4.60	5	40	3.80	7	40	3.58
1	30	4.58	5	50	3.72	7	45	3.50
1	40	4.55	6	00	3.66	7	50	3.44
1	50	4.52	6	5	3.62	7	55	3.38
2	00	4.50	6	10	3.57	8	00	3.25
2	10	4.48	6	15	3.51	8	5	3.12
2	20	4.44	6	20	3.46	8	10	3.00
2	30	4.41	6	25	3.40			
2	40	4.39	6	30	3.34			
2	50	4.36	6	35	3.29			
3	00	4.34	6	40	3.19			
3	10	4.31	6	45	3.10			
3	20	4.30	6	50	3.00			
3	30	4.28						
3	40	4.24						
3	50	4.20						
						8	10	Start
						8	15	4.42
						8	20	4.50
						8	30	4.55
						8	40	4.60
						8	50	4.60
						9	00	4.58
						9	10	4.57
						9	20	4.55
						9	30	4.51
						9	40	4.45
						9	50	4.39
						10	00	4.30
						10	10	4.20
						10	20	4.15
						10	30	4.03
						10	40	4.00
						10	50	3.92
						11	00	3.82
						11	5	3.78
						11	10	3.70
						11	15	3.63
						11	20	3.59
						11	25	3.50
						11	30	3.40
						11	35	3.35
						11	40	3.22
						11	45	3.14
						11	50	3.01
						11	51	3.00
Watt hours			143.740			15.983		25.383

APPENDIX 2
Table 4.4b (Sheet 18)

Battery 23
12 March 1953

Discharge rate 300 amp			Discharge rate 200 amp			Discharge rate 100 amp		
		OCV 6.40						
Min.	Sec.	Volts	Min.	Sec.	Volts	Min.	Sec.	Volts
0	2	4.95	3	40	4.18	6	42	Start
0	5	4.87	3	50	4.13	6	45	3.90
0	10	4.83	4	00	4.10	6	50	3.92
0	15	4.82	4	10	4.08	7	00	3.95
0	20	4.81	4	20	4.05	7	10	3.93
0	30	4.78	4	30	4.00	7	20	3.90
0	40	4.70	4	40	3.93	7	30	3.82
0	50	4.68	4	50	3.92	7	40	3.76
1	00	4.63	5	00	3.88	7	50	3.70
1	10	4.60	5	10	3.83	8	00	3.62
1	20	4.58	5	20	3.78	8	5	3.58
1	30	4.55	5	30	3.72	8	10	3.52
1	40	4.52	5	40	3.65	8	15	3.47
1	50	4.50	5	50	3.58	8	20	3.40
2	00	4.47	6	00	3.50	8	25	3.34
2	10	4.42	6	10	3.40	8	30	3.22
2	20	4.40	6	15	3.38	8	35	3.18
2	30	4.38	6	20	3.30	8	40	3.08
2	40	4.35	6	25	3.20	8	44	3.00
2	50	4.32	6	30	3.18			
3	00	4.30	6	35	3.10			
3	10	4.27	6	40	3.03			
3	20	4.22	6	42	3.00			
3	30	4.20						
						8	44	Start
						8	50	4.38
						8	55	4.42
						9	00	4.43
						9	10	4.51
						9	20	4.53
						9	30	4.55
						9	40	4.58
						9	50	4.58
						10	00	4.56
						10	10	4.57
						10	20	4.57
						10	30	4.55
						10	40	4.52
						10	50	4.50
						11	00	4.48
						11	10	4.44
						11	20	4.40
						11	30	4.33
						11	40	4.30
						11	50	4.24
						12	00	4.20
						12	10	4.12
						12	20	4.08
						12	30	4.00
						12	40	3.97
						12	50	3.90
						13	00	3.85
						13	10	3.80
						13	20	3.74
						13	30	3.68
						13	35	3.65
						13	40	3.60
						13	45	3.56
						13	50	3.50
						13	55	3.45
						14	00	3.40
						14	5	3.37
						14	10	3.28
						14	15	3.20
						14	20	3.15
						14	25	3.06
						14	27	3.00
Watt Hrs.		139.460			24.777			39.425

APPENDIX 2
Table 4.4b (Sheet 19)

Battery 24
12 March 1953

Discharge rate 300 amp			Discharge rate 200 amp			Discharge rate 100 amp		
OCV 6.40								
Min.	Sec.	Volts	Min.	Sec.	Volts	Min.	Sec.	Volts
0	5	4.85	4	00	4.13	6	53	Start
0	10	4.80	4	10	4.10	6	55	3.98
0	15	4.78	4	20	4.08	7	00	3.98
0	20	4.78	4	30	4.05	7	10	3.99
0	30	4.73	4	40	4.00	7	20	3.99
0	40	4.70	4	50	3.98	7	30	3.94
0	50	4.68	5	00	3.95	7	40	3.89
1	00	4.64	5	10	3.90	7	50	3.83
1	10	4.60	5	20	3.84	8	00	3.78
1	20	4.58	5	30	3.78	8	10	3.68
1	30	4.56	5	40	3.74	8	20	3.60
1	40	4.52	5	50	3.68	8	25	3.55
1	50	4.50	6	00	3.60	8	30	3.49
2	00	4.48	6	5	3.57	8	35	3.43
2	10	4.46	6	10	3.50	8	40	3.38
2	20	4.42	6	15	3.47	8	45	3.30
2	30	4.40	6	20	3.42	8	50	3.20
2	40	4.38	6	25	3.38	8	55	3.10
2	50	4.33	6	30	3.30	9	00	3.03
3	00	4.31	6	35	3.28	9	1	3.00
3	10	4.30	6	40	3.21			
3	20	4.26	6	45	3.14			
3	30	4.23	6	50	3.08			
3	40	4.20	6	53	3.00			
3	50	4.18						

Min.	Sec.	Volts
9	1	Start
9	5	4.40
9	10	4.47
9	20	4.52
9	30	4.58
9	40	4.59
9	50	4.60
10	00	4.62
10	10	4.61
10	20	4.61
10	30	4.60
10	40	4.60
10	50	4.59
11	00	4.58
11	10	4.57
11	20	4.53
11	30	4.50
11	40	4.48
11	50	4.44
12	00	4.40
12	10	4.38
12	20	4.33
12	30	4.28
12	40	4.24
12	50	4.19
13	00	4.10
13	10	4.04
13	20	3.97
13	30	3.90
13	40	3.84
13	50	3.72
14	00	3.62
14	5	3.57
14	10	3.49
14	15	3.43
14	20	3.38
14	25	3.30
14	30	3.20
14	35	3.14
14	40	3.09
14	45	3.00

Watt Hrs.	143.545	26.253	40.313

APPENDIX 2
Table 4.4b (Sheet 20)

Battery 27
12 March 1953

Discharge rate 300 amp						Discharge rate 200 amp			Discharge rate 100 amp		
OCV 6.36											
Min.	Sec.	Volts	Min.	Sec.	Volts	Min.	Sec.	Volts	Min.	Sec.	Volts
0	2	5.00	4	00	4.28	7	10	Start	8	58	Start
0	5	4.90	4	10	4.25	7	15	3.90	9	5	4.40
0	10	4.89	4	20	4.21	7	20	3.92	9	15	4.40
0	15	4.88	4	30	4.18	7	30	3.95	9	20	4.48
0	20	4.87	4	40	4.15	7	40	3.93	9	30	4.48
0	30	4.84	4	50	4.10	7	50	3.89	9	40	4.50
0	40	4.80	5	00	4.08	8	00	3.80	9	50	4.50
0	50	4.78	5	10	4.06	8	5	3.75	10	00	4.50
1	00	4.74	5	20	3.99	8	10	3.70	10	10	4.50
1	10	4.71	5	30	3.93	8	15	3.64	10	20	4.49
1	20	4.68	5	40	3.90	8	20	3.59	10	30	4.44
1	30	4.67	5	50	3.84	8	25	3.50	10	40	4.40
1	40	4.63	6	00	3.80	8	30	3.47	10	50	4.34
1	50	4.61	6	5	3.74	8	35	3.39	11	00	4.30
2	00	4.60	6	10	3.70	8	40	3.33	11	10	4.20
2	10	4.58	6	15	3.67	8	45	3.27	11	20	4.10
2	20	4.54	6	20	3.62	8	50	3.18	11	30	4.03
2	30	4.52	6	25	3.59	8	55	3.08	11	40	3.98
2	40	4.49	6	30	3.53	8	58	3.00	11	50	3.92
2	50	4.47	6	35	3.48				12	00	3.85
3	00	4.42	6	40	3.43				12	10	3.80
3	10	4.40	6	45	3.39				12	20	3.76
3	20	4.38	6	50	3.32				12	30	3.71
3	30	4.37	6	55	3.22				12	35	3.68
3	40	4.32	7	00	3.18				12	40	3.65
3	50	4.30	7	5	3.10				12	45	3.60
			7	10	3.00				12	50	3.58
									12	55	3.54
									13	00	3.50
									13	5	3.45
									13	10	3.40
									13	15	3.25
									13	20	3.12
									13	21	3.00
Watt Hrs.		152.640				21.873					29.783

APPENDIX 2
Table 4.45 (Sheet 21)

Battery 28
12 March 1953

Discharge rate 300 amp					Discharge rate 200 amp			Discharge rate 100 amp		
OCV 6.33										
Min.	Sec.	Volts	Min.	Sec.	Volts	Min.	Sec.	Volts	Min.	Sec.	Volts
0	2	5.03	3	50	4.39	7	16	Start	8	45	Start
0	5	4.92	4	00	4.37	7	20	3.87	8	50	4.45
0	10	4.92	4	10	4.32	7	25	3.97	8	55	4.55
0	15	4.92	4	20	4.30	7	30	3.97	9	00	4.61
0	20	4.90	4	30	4.28	7	40	3.95	9	10	4.65
0	30	4.89	4	40	4.23	7	50	3.90	9	20	4.70
0	40	4.83	4	50	4.20	8	00	3.83	9	30	4.70
0	50	4.81	5	00	4.19	8	10	3.75	9	40	4.69
1	00	4.79	5	10	4.13	8	20	3.67	9	50	4.68
1	10	4.77	5	20	4.10	8	30	3.55	10	00	4.62
1	20	4.73	5	30	4.06	8	35	3.47	10	10	4.60
1	30	4.71	5	40	4.00	8	40	3.27	10	20	4.53
1	40	4.70	5	50	3.97	8	45	3.00	10	30	4.50
1	50	4.68	6	00	3.91				10	40	4.47
2	00	4.63	6	10	3.84				10	50	4.43
2	10	4.62	6	20	3.78				11	00	4.39
2	20	4.60	6	30	3.70				11	10	4.31
2	30	4.59	6	40	3.60				11	20	4.19
2	40	4.55	6	50	3.48				11	30	4.00
2	50	4.52	7	00	3.33				11	35	3.96
3	00	4.50	7	5	3.24				11	40	3.87
3	10	4.49	7	10	3.13				11	45	3.78
3	20	4.46	7	15	3.02				11	50	3.69
3	30	4.43	7	16	3.00				11	55	3.60
3	40	4.41							12	00	3.50
									12	5	3.43
									12	10	3.33
									12	15	3.23
									12	20	3.13
									12	25	3.04
									12	29	3.00
Watt Hrs.		157.200				18.453					26.368

APPENDIX 2
Table 4.4b (Sheet 22)

Battery 29
12 March 1953

Discharge rate 300 amp			Discharge rate 200 amp			Discharge rate 100 amp				
OCV 6.36										
Min.	Sec.	Volts	Min.	Sec.	Volts	Min.	Sec.	Volts	Min.	Sec.	Volts
0	2	4.78	4	11	Start	6	51	Start	13	10	3.78
0	5	4.75	4	15	3.50	6	55	4.40	13	20	3.78
0	10	4.73	4	20	4.10	7	00	4.50	13	30	3.76
0	15	4.71	4	30	4.08	7	10	4.58	13	40	3.74
0	20	4.70	4	40	4.02	7	20	4.60	13	50	3.70
0	30	4.66	4	50	3.96	7	30	4.60	14	00	3.70
0	40	4.62	5	00	3.90	7	40	4.60	14	10	3.68
0	50	4.56	5	5	3.82	7	50	4.56	14	20	3.66
1	00	4.52	5	10	3.80	8	00	4.54	14	30	3.63
1	10	4.48	5	20	3.70	8	10	4.52	14	40	3.60
1	20	4.44	5	30	3.60	8	20	4.50	14	50	3.59
1	30	4.37	5	40	3.52	8	30	4.49	15	00	3.57
1	40	4.34	5	50	3.46	8	40	4.44	15	10	3.55
1	50	4.30	6	00	3.40	8	50	4.41	15	20	3.53
2	00	4.24	6	5	3.34	9	00	4.40	15	30	3.51
2	10	4.18	6	10	3.30	9	10	4.37	15	40	3.49
2	20	4.13	6	15	3.26	9	20	4.34	15	50	3.46
2	30	4.09	6	20	3.21	9	30	4.32	16	00	3.44
2	40	4.00	6	25	3.19	9	40	4.30	16	10	3.42
2	50	3.92	6	30	3.13	9	50	4.28	16	20	3.41
3	00	3.86	6	35	3.10	10	00	4.25	16	30	3.40
3	10	3.79	6	40	3.09	10	10	4.22	16	40	3.38
3	20	3.68	6	45	3.04	10	20	4.20	16	50	3.34
3	30	3.56	6	51	3.00	10	30	4.18	17	00	3.30
3	35	3.50				10	40	4.14	17	10	3.29
3	40	3.42				10	50	4.10	17	20	3.27
3	45	3.37				11	00	4.08	17	30	3.23
3	50	3.30				11	10	4.06	17	40	3.21
3	55	3.22				11	20	4.04	17	50	3.19
4	00	3.18				11	30	4.01	18	00	3.15
4	5	3.10				11	40	3.99	18	5	3.13
4	10	3.01				11	50	3.96	18	10	3.11
4	11	3.00				12	00	3.95	18	15	3.10
						12	10	3.92	18	20	3.09
						12	20	3.90	18	25	3.07
						12	30	3.88	18	30	3.04
						12	40	3.84	18	35	3.02
						12	50	3.82	18	39	3.00
						13	00	3.80			
Watt Hrs.		86.055			31.783						75.930

APPENDIX 2
Table 4.4b (Sheet 23)

Battery 30
12 March 1953

Discharge rate 300 amp			Discharge rate 200 amp			Discharge rate 100 amp		
OCV 6.38								
Min.	Sec.	Volts	Min.	Sec.	Volts	Min.	Sec.	Volts
0	2	5.00	3	40	4.31	7	00	Start
0	5	4.90	3	50	4.28	7	5	3.93
0	10	4.90	4	00	4.27	7	10	4.00
0	15	4.89	4	10	4.23	7	15	4.00
0	20	4.88	4	20	4.20	7	20	4.01
0	30	4.85	4	30	4.18	7	30	3.97
0	40	4.81	4	40	4.13	7	40	3.93
0	50	4.78	4	50	4.10	7	50	3.89
1	00	4.75	5	00	4.03	8	00	3.80
1	10	4.72	5	10	4.00	8	10	3.73
1	20	4.70	5	20	3.96	8	20	3.64
1	30	4.68	5	30	3.90	8	30	3.53
1	40	4.64	5	40	3.85	8	35	3.48
1	50	4.60	5	50	3.78	8	40	3.40
2	00	4.59	6	00	3.71	8	45	3.33
2	10	4.56	6	10	3.63	8	50	3.23
2	20	4.52	6	20	3.56	8	55	3.13
2	30	4.50	6	30	3.43	9	00	3.02
2	40	4.48	6	35	3.38	9	2	3.00
2	50	4.46	6	40	3.31			
3	00	4.42	6	45	3.24			
3	10	4.40	6	50	3.18			
3	20	4.38	6	55	3.09			
3	30	4.36	7	00	3.00			

						9	2	Start
						9	5	4.40
						9	10	4.42
						9	15	4.48
						9	20	4.51
						9	30	4.57
						9	40	4.58
						9	50	4.59
						10	00	4.60
						10	10	4.60
						10	20	4.58
						10	30	4.56
						10	40	4.54
						10	50	4.51
						11	00	4.50
						11	10	4.43
						11	20	4.40
						11	30	4.33
						11	40	4.31
						11	50	4.27
						12	00	4.22
						12	10	4.17
						12	20	4.13
						12	30	4.10
						12	40	4.04
						12	50	4.00
						13	00	3.91
						13	10	3.81
						13	20	3.70
						13	30	3.55
						13	35	3.48
						13	40	3.40
						13	45	3.31
						13	50	3.22
						13	55	3.17
						14	00	3.10
						14	5	3.03
						14	7	3.00

Watt Hrs.	149.175	24.997	35.380

APPENDIX 2
Table 4.4b (Sheet 24)

Battery 31
12 March 1953

Discharge rate 300 amp			Discharge rate 200 amp			Discharge rate 100 amp					
OCV 6.35											
Min.	Sec.	Volts	Min.	Sec.	Volts	Min.	Sec.	Volts	Min.	Sec.	Volts
0	2	4.50	2	42	Start	5	41	Start	10	00	3.90
0	5	4.30	2	45	3.95	5	45	4.40	10	10	3.84
0	10	4.23	2	50	4.00	5	50	4.42	10	20	3.80
0	15	4.18	2	55	4.00	5	55	4.46	10	30	3.78
0	20	4.11	3	00	4.00	6	00	4.48	10	40	3.72
0	30	4.09	3	10	4.00	6	10	4.50	10	50	3.69
0	40	4.00	3	20	3.95	6	20	4.50	11	00	3.61
0	50	3.93	3	30	3.92	6	30	4.51	11	5	3.57
1	00	3.85	3	40	3.89	6	40	4.49	11	10	3.54
1	10	3.80	3	50	3.82	6	50	4.48	11	15	3.50
1	20	3.70	4	00	3.79	7	00	4.44	11	20	3.47
1	30	3.63	4	10	3.73	7	10	4.43	11	25	3.46
1	40	3.58	4	20	3.68	7	20	4.42	11	30	3.43
1	50	3.49	4	30	3.60	7	30	4.40	11	35	3.41
2	00	3.40	4	40	3.53	7	40	4.38	11	40	3.40
2	5	3.38	4	50	3.43	7	50	4.33	11	45	3.37
2	10	3.32	5	00	3.38	8	00	4.30	11	50	3.32
2	15	3.29	5	5	3.33	8	10	4.23	11	55	3.29
2	20	3.22	5	10	3.29	8	20	4.22	12	00	3.27
2	25	3.18	5	15	3.23	8	30	4.20	12	5	3.22
2	30	3.12	5	20	3.21	8	40	4.18	12	10	3.19
2	35	3.09	5	25	3.18	8	50	4.12	12	15	3.15
2	40	3.02	5	30	3.10	9	00	4.10	12	20	3.11
2	42	3.00	5	35	3.06	9	10	4.08	12	25	3.08
			5	41	3.00	9	20	4.03	12	30	3.04
						9	30	4.00	12	35	3.02
						9	40	3.97	12	40	3.00
						9	50	3.91			
Watt Hrs.		49.890			36.193						46.138

APPENDIX 2
Table 4.4b (Sheet 25)

Battery 32
12 March 1953

Discharge rate 300 amp			Discharge rate 200 amp			Discharge rate 100 amp					
OCV 6.35											
Min.	Sec.	Volts	Min.	Sec.	Volts	Min.	Sec.	Volts	Min.	Sec.	Volts
0	2	4.55	3	13	Start	6	6	Start	10	25	3.60
0	5	4.48	3	15	3.95	6	10	4.38	10	30	3.58
0	10	4.40	3	20	3.98	6	20	4.44	10	35	3.54
0	15	4.39	3	30	3.97	6	30	4.43	10	40	3.50
0	20	4.35	3	40	3.93	6	40	4.42	10	45	3.49
0	30	4.28	3	50	3.90	6	50	4.41	10	50	3.44
0	40	4.21	4	00	3.88	7	00	4.41	10	55	3.40
0	50	4.16	4	10	3.84	7	10	4.40	11	00	3.38
1	00	4.09	4	20	3.80	7	20	4.38	11	5	3.35
1	10	4.02	4	30	3.75	7	30	4.37	11	10	3.30
1	20	3.98	4	40	3.70	7	40	4.30	11	15	3.28
1	30	3.90	4	50	3.63	7	50	4.28	11	20	3.25
1	40	3.83	5	00	3.57	8	00	4.25	11	25	3.20
1	50	3.75	5	5	3.53	8	10	4.22	11	30	3.18
2	00	3.67	5	10	3.49	8	20	4.20	11	35	3.12
2	5	3.60	5	15	3.45	8	30	4.18	11	40	3.08
2	10	3.58	5	20	3.40	8	40	4.16	11	45	3.04
2	15	3.52	5	25	3.37	8	50	4.10	11	47	3.00
2	20	3.48	5	30	3.33	9	00	4.05			
2	25	3.41	5	35	3.30	9	10	4.00			
2	30	3.38	5	40	3.25	9	20	3.98			
2	35	3.32	5	45	3.20	9	30	3.92			
2	40	3.30	5	50	3.17	9	40	3.88			
2	45	3.27	5	55	3.12	9	50	3.80			
2	50	3.21	6	00	3.08	10	00	3.75			
2	55	3.17	6	5	3.03	10	5	3.70			
3	00	3.12	6	6	3.00	10	10	3.69			
3	5	3.09				10	15	3.67			
3	10	3.04				10	20	3.62			
3	13	3.00									
Watt Hrs.		61.155			34.800						37.398

APPENDIX 2

Table 4.5a. Charging data for June 1952 test batteries after 8 months storage.

Cycle 5: Charged for 38 hours at 5 amperes

TRAY Number 1

On Charge 3:20 p.m. 3/15/53

Battery	Cell	Time	Temperature	Specific Gravity	Volts
1T	1	Mar. 16	35.5	1.320	2.41
	2	10:30 a.m.	35.8	1.320	2.41
	3		35.6	1.312	2.38
2T	1		35.1	1.310	2.38
	2		35.8	1.315	2.40
	3		34.3	1.320	2.40
1T	1	9:00 p.m.	38.4	1.293	
	2		39.0	1.310	
	3		39.3	1.295	
2T	1		39.1	1.289	
	2		38.9	1.290	
	3		37.9	1.305	
1T	1	4:45 a.m.	39.0		2.40
	2	Mar. 17	39.9		2.41
	3		39.8		2.37
2T	1		39.8		2.37
	2		39.8		2.39
	3		38.2		2.41
1T	1	8:50 a.m.	32.5	1.294	
	2		33.6	1.320	
	3		34.0	1.295	
2T	1		34.0	1.290	
	2		33.8	1.290	
	3		32.4	1.310	

Off Charge 5:20 a.m. 3/17/53

Table 4.5a Continued (sheet 2)

TRAY Number 2

On Charge 3:20 p.m. 3/15/53

Battery	Cell	Time	Temperature	Specific Gravity	Volts
3U	1	Mar. 16	35.0	1.301	2.37
	2	10:30 a.m.	35.2	1.297	2.37
	3		36.0	1.292	2.36
4U	1		36.4	1.305	2.38
	2		35.5	1.299	2.37
	3		34.1	1.293	2.38
3U	1	9:00 p.m.	38.0	1.280	
	2		39.1	1.276	
	3		39.0	1.270	
4U	1		39.2	1.285	
	2		39.0	1.279	
	3		37.1	1.278	
3U	1	Mar. 17	39.0		2.37
	2	4:45 a.m.	39.4		2.37
	3		39.8		2.37
4U	1		40.4		2.38
	2		39.4		2.37
	3		38.0		2.39
3U	1	8:50 a.m.	32.6	1.283	
	2		33.7	1.280	
	3		34.3	1.274	
4U	1		34.0	1.288	
	2		33.7	1.283	
	3		33.0	1.281	

Off Charge 5:20 a.m. 3/17/53

APPENDIX 2.
Table 4.5a Continued (sheet 3)

TRAY Number 3

On Charge 3:20 p.m. 3/15/53

Battery	Cell	Time	Tempera-ture	Specific Gravity	Volts
5U	1	Mar. 16	35.0	1.306	2.39
	2	10:30 a.m.	35.2	1.308	2.37
	3		36.4	1.300	2.38
6U	1		35.0	1.298	2.38
	2		35.7	1.304	2.39
	3		34.0	1.300	2.37
5U	1	9:00 p.m.	37.3	1.285	
	2		39.2	1.287	
	3		39.0	1.279	
6U	1		38.5	1.285	
	2		38.0	1.285	
	3		36.7	1.279	
5U	1	Mar. 17	38.4		2.39
	2	4:45 a.m.	39.4		2.37
	3		39.7		2.38
6U	1		39.7		2.37
	2		38.7		2.39
	3		37.0		2.39
5U	1	8:50 a.m.	32.3	1.288	
	2		33.3	1.290	
	3		34.0	1.284	
6U	1		33.2	1.288	
	2		32.9	1.290	
	3		32.0	1.282	

Off Charge 5:20 a.m. 3/17/53

Table 4.5a Continued (sheet 4)

TRAY Number 6

On Charge 3:20 p.m. 3/15/53

Battery	Cell	Time	Temperature	Specific Gravity	Volts
11T	1	Mar. 16	34.2	1.302	2.38
	2	10:30 a.m.	35.0	1.308	2.38
	3		35.8	1.293	2.36
12T	1		36.0	1.298	2.36
	2		35.5	1.305	2.36
	3		34.7	1.307	2.37
11T	1	9:00 p.m.	36.0	1.285	
	2		37.7	1.282	
	3		38.1	1.276	
12T	1		38.6	1.285	
	2		38.4	1.287	
	3		37.6	1.291	
11T	1	Mar. 17	37.3		2.39
	2	4:45 a.m.	38.7		2.38
	3		39.0		2.36
12T	1		39.7		2.37
	2		39.5		2.37
	3		38.0		2.39
11T	1	8:50 a.m.	31.7	1.288	
	2		32.8	1.283	
	3		33.1	1.281	
12T	1		33.7	1.288	
	2		33.3	1.290	
	3		32.0	1.296	

Off Charge 5:20 a.m. 3/17/53

Table 4.5a Continued (sheet 5)

TRAY Number 7

On Charge 3:20 p.m. 3/15/53

Battery	Cell	Time	Temperature	Specific Gravity	Volts
13T	1	Mar. 16	34.5	1.312	2.38
	2	10:40 a.m.	35.8	1.320	2.38
	3		35.6	1.320	2.38
14T	1		36.5	1.320	2.38
	2		35.9	1.315	2.38
	3		34.0	1.315	2.38
13T	1	9:15 p.m.	37.0	1.295	
	2		38.7	1.292	
	3		39.1	1.294	
14T	1		39.0	1.297	
	2		39.0	1.294	
	3		37.6	1.295	
13T	1	4:50 a.m.	38.2		2.39
	2	Mar. 17	39.7		2.38
	3		39.9		2.38
14T	1		40.5		2.38
	2		39.6		2.38
	3		37.7		2.39
13T	1	9:00 a.m.	32.8	1.297	
	2		33.7	1.298	
	3		33.9	1.298	
14T	1		34.2	1.301	
	2		33.8	1.293	
	3		32.7	1.300	

Off Charge 5:20 a.m. 3/17/53

Table 4.5a, Continued (sheet 6)

TRAY Number 8

On Charge 3:20 p m. 3/15/53

Battery	Cell	Time	Temperature	Specific Gravity	Volts
15U	1	Mar. 16	34.7	1.320	2.40
	2	10:40 a.m.	36.4	1.300	2.37
	3		36.0	1.297	2.37
16U	1		35.9	1.290	2.35
	2		35.8	1.286	2.36
	3		34.0	1.289	2.36
15U	1	9:15 p.m.	37.9	1.305	
	2		39.1	1.280	
	3		39.7	1.275	
16U	1		39.0	1.270	
	2		38.8	1.269	
	3		37.3	1.270	
15U	1	Mar. 17	39.0		2.40
	2	4:50 a.m.	40.0		2.38
	3		40.2		2.37
16U	1		40.4		2.36
	2		39.6		2.37
	3		37.7		2.37
15U	1	9:00 a.m.	32.7	1.306	
	2		33.8	1.283	
	3		34.3	1.279	
16U	1		33.4	1.270	
	2		33.0	1.273	
	3		32.3	1.275	

Off Charge 5:20 a.m. 3/17/53

TRAY Number 11

On Charge 3:20 p.m. 3/15/53

Battery	Cell	Time	Temperature	Specific Gravity	Volts
21T	1	Mar. 16	35.1	1.305	2.39
	2	10:40 a.m.	36.0	1.308	2.36
	3		36.4	1.308	2.35
22M*	1		36.3	1.302	2.33
	2		35.6	1.310	2.37
	3		34.8	1.303	2.35
21T	1	9:15 p.m.	37.1	1.300	
	2		39.0	1.305	
	3		39.1	1.305	
22M*	1		38.7	1.295	
	2		38.4	1.295	
	3		37.0	1.295	
21T	1	Mar. 17	38.3		2.41
	2	4:50 a.m.	39.9		2.37
	3		39.9		2.36
22M*	1		39.9		2.34
	2		39.4		2.38
	3		37.8		2.36
21T	1	9:00 a.m.	32.5	1.307	
	2		33.4	1.306	
	3		33.7	1.310	
22M*	1		33.8	1.293	
	2		33.2	1.303	
	3		31.8	1.301	

Off Charge 5:20 a.m. 3/17/53

M* = $MgSO_4$ + Na_2SO_4

Table 4.5a. Continued (Sheet 8)

TRAY Number 12

On Charge 3:20 p.m. 3/15/53

Battery	Cell	Time	Temperature	Specific Gravity	Volts
23T	1	Mar. 16	35.3	1.315	2.38
	2	10:50 a.m.	36.0	1.320	2.39
	3		36.9	1.320	2.39
24U	1		36.7	1.298	2.37
	2		36.6	1.298	2.38
	3		34.9	1.301	2.38
23T	1	9:20 p.m.	37.9	1.295	
	2		39.4	1.296	
	3		39.8	1.290	
24U	1		39.7	1.283	
	2		39.4	1.278	
	3		37.6	1.280	
23T	1	Mar. 17	38.6		2.38
	2	4:55 a.m.	40.2		2.39
	3		40.3		2.40
24U	1		40.3		2.38
	2		39.9		2.39
	3		38.8		2.39
23T	1	9:10 a.m.	33.0	1.293	
	2		33.0	1.299	
	3		34.0	1.296	
24U	1		34.0	1.280	
	2		34.0	1.280	
	3		33.2	1.285	

Off Charge 5:20 a.m. 3/17/53

Table 4.5a Continued (sheet 9)

TRAY Number 14

On Charge 3:20 p.m. 3/15/53

Battery	Cell	Time	Temperature	Specific Gravity	Volts
27T	1	Mar. 16	35.0	1.293	2.36
	2	10:50 a.m.	35.2	1.310	2.36
	3		36.5	1.298	2.35
28U	1		36.0	1.288	2.36
	2		35.7	1.291	2.36
	3		33.8	1.280	2.36
27T	1	9:20 p.m.	38.2	1.276	
	2		39.1	1.283	
	3		39.0	1.279	
28U	1		38.2	1.270	
	2		37.4	1.270	
	3		36.1	1.266	
27T	1	Mar. 17	38.9		2.35
	2	4:55 a.m.	39.8		2.36
	3		39.6		2.36
28U	1		39.3		2.37
	2		38.3		2.37
	3		36.9		2.37
27T	1	9:10 a.m.	33.0	1.278	
	2		33.2	1.288	
	3		33.5	1.280	
28U	1		32.9	1.271	
	2		32.4	1.272	
	3		31.8	1.270	

Off Charge 5:20 a.m. 3/17/53

Table 4.5a, Continued (sheet 10)

TRAY Number 15

On Charge 3:20 p.m. 3/15/53

Battery	Cell	Time	Temperature	Specific Gravity	Volts
29U	1	Mar. 16	34.1	1.286	2.39
	2	10:50 a.m.	36.0	1.291	2.38
	3		36.4	1.282	2.39
30T	1		36.8	1.307	2.40
	2		36.2	1.310	2.37
	3		35.2	1.300	2.39
29U	1	9:20 p.m.	36.3	1.282	
	2		38.2	1.288	
	3		39.0	1.275	
30T	1		39.2	1.300	
	2		39.1	1.305	
	3		37.5	1.295	
29U	1	4:55 a.m.	37.3		2.40
	2	Mar. 17	38.7		2.39
	3		39.7		2.40
30T	1		39.7		2.41
	2		39.8		2.38
	3		38.3		2.39
29U	1	9:10 a.m.	31.4	1.280	
	2		32.7	1.287	
	3		33.9	1.276	
30T	1		33.8	1.300	
	2		33.8	1.306	
	3		32.7	1.296	

Off Charge 5:20 a.m. 3/17/53

Table 4.5a, Continued (sheet 11)

TRAY Number 16

On Charge 3:20 p.m. 3/15/53

Battery	Cell	Time	Temperature	Specific Gravity	Volts
31U	1	Mar. 16	35.5	1.283	2.36
	2	10:50 a.m.	37.0	1.285	2.36
	3		37.2	1.291	2.36
32T	1		37.2	1.305	2.36
	2		36.2	1.307	2.36
	3		35.0	1.320	2.38
31U	1	9:20 p.m.	37.3	1.279	
	2		39.1	1.274	
	3		39.2	1.277	
32T	1		39.2	1.290	
	2		38.5	1.280	
	3		37.5	1.290	
31U	1	Mar. 17	38.3		2.37
	2	4:55 a.m.	39.3		2.38
	3		39.8		2.38
32T	1		39.6		2.37
	2		39.5		2.37
	3		38.0		2.39
31U	1	9:10 a.m.	32.6	1.283	
	2		33.7	1.276	
	3		34.4	1.282	
32T	1		34.1	1.297	
	2		33.7	1.286	
	3		32.3	1.292	

Off Charge 5:20 a.m. 3/17/53

Table 4.5b, Discharge Data, 5th Cycle

Battery 1
Date: 3/17/53

300 amp Discharge			200 amp discharge			100 amp discharge			100 amp discharge		
OCV		6.38									
min	sec	volts	min	sec	volts	min	sec	volts	min	sec	volts
0	02	4.75	3	48	Start	6	30	Start	12	30	3.58
	05	4.60		55	4.04		35	4.48		35	3.52
	10	4.58	4		4.07		40	4.56		40	3.51
	15	4.53		10	4.05		50	4.58		45	3.50
	20	4.51		20	4.02	7		4.58		50	3.49
	30	4.47		30	3.98		10	4.60		55	3.48
	40	4.44		40	3.91		20	4.60	13		3.46
	50	4.38		50	3.85		30	4.60		5	3.44
1		4.33	5		3.80		40	4.58		10	3.42
	10	4.28		10	3.72		50	4.56		15	3.40
	20	4.23		20	3.62	8		4.51		20	3.38
	30	4.17		30	3.53		10	4.51		25	3.36
	40	4.11		35	3.50		20	4.49		30	3.34
	50	4.04		40	3.45		30	4.47		35	3.32
2		4.00		45	3.40		40	4.45		40	3.30
	10	3.94		50	3.37		50	4.40		45	3.29
	20	3.83		55	3.32	9		4.34		50	3.28
	30	3.79	6		3.26		10	4.32		55	3.26
	40	3.72		5	3.22		20	4.30	14		3.23
	50	3.64		10	3.20		30	4.25		5	3.21
3		3.53		15	3.14		40	4.20		10	3.19
	5	3.48		20	3.10		50	4.18		15	3.19
	10	3.44		25	3.05	10		4.12		20	3.18
	15	3.40		30	3.00		10	4.10		25	3.18
	20	3.36					20	4.04		30	3.15
	25	3.30					30	4.02		35	3.11
	30	3.24					40	3.99		40	3.09
	35	3.20					50	3.94		45	3.08
	40	3.11				11		3.90		50	3.06
	45	3.04					10	3.86		55	3.03
	48	3.00					20	3.82	15		3.01
							30	3.78		05	3.00
							40	3.75			
							50	3.71			
						12		3.68			
							5	3.65			
							10	3.62			
							15	3.60			
							20	3.60			
							25	3.60			
							30	3.58			

Watt hours 75.355 32.713 56.020

APPENDIX 2, Table 4.5b (sheet 2)

Battery 2
Date: 3/17/53

OCV 6.36

300 amp Discharge			200 amp discharge			100 amp discharge			100 amp discharge		
min	sec	volts	min	sec	volts	min	sec	volts	min	sec	volts
0	02	4.74	5	31	start	8	27	start	15		3.58
	05	4.69		35	3.98		30	4.40		05	3.55
	10	4.64		40	4.00		35	4.50		10	3.52
	15	4.62		50	4.02		40	4.55		15	3.49
	20	4.60	6		4.01		50	4.57		20	3.47
	30	4.59		10	4.00	9		4.57		25	3.44
	40	4.55		20	3.97		10	4.60		30	3.42
	50	4.50		30	3.90		20	4.60		35	3.39
1		4.48		40	3.85		30	4.58		40	3.35
	10	4.44		50	3.81		40	4.56		45	3.33
	20	4.40	7		3.75		50	4.54		50	3.30
	30	4.35		10	3.70	10		4.52		55	3.29
	40	4.30		20	3.62		10	4.50	16		3.27
	50	4.29		30	3.53		20	4.50		05	3.24
2		4.27		35	3.50		30	4.48		10	3.21
	10	4.23		40	3.46		40	4.47		15	3.18
	20	4.20		45	3.40		50	4.45		20	3.14
	30	4.16		50	3.36	11		4.40		25	3.10
	40	4.11		55	3.31		10	4.38		30	3.06
	50	4.08	8		3.28		20	4.35		35	3.01
3		4.02		05	3.23		30	4.32		37	3.00
	10	4.00		10	3.18		40	4.28			
	20	3.95		15	3.12		50	4.23			
	30	3.90		20	3.07	12		4.21			
	40	3.84		25			10	4.20			
	50	3.80		27	3.00		20	4.16			
4		3.74					30	4.13			
	10	3.70					40	4.08			
	20	3.61					50	4.04			
	30	3.54				13		4.01			
	35	3.50					10	4.00			
	40	3.46					20	3.98			
	45	3.41					30	3.93			
	50	3.39					40	3.88			
	55	3.35					50	3.83			
5		3.30				14		3.80			
	05	3.27					10	3.77			
	10	3.23					20	3.74			
	15	3.18					30	3.70			
	20	3.12					40	3.65			
	25	3.09					50	3.61			
	31	3.00				15		3.58			

Watt hours 110.815 35.827 54.843

APPENDIX 2, Table 4.5b (sheet 3)

Battery 3
Date: 3/17/53

300 amp Discharge			300 amp discharge			200 amp discharge			100 amp discha rge		
OCV		6.32									
min	sec	volts	min	sec	volts	min	sec	volts	min	sec	volts
0	02	5.40	5	50	3.78	7	04	start	9	03	start
	05	4.82	6		3.70		10	3.98		05	4.20
	10	4.80		10	3.62		20	4.00		10	4.40
	15	4.78		20	3.54		30	4.00		20	4.53
	20	4.78		30	3.46		40	3.95		30	4.58
	30	4.74		35	3.42		50	3.90		40	4.60
	40	4.72		40	3.38	8		3.83		50	4.61
	50	4.70		45	3.29		10	3.75	10		4.60
1		4.64		50	3.23		20	3.66		10	4.62
	10	4.62		55	3.17		30	3.55		20	4.62
	20	4.60	7		3.10		35	3.50		30	4.60
	30	4.59		04	3.00		40	3.44		40	4.59
	40	4.56					45	3.38		50	4.53
	50	4.54					50	3.30	11		4.50
2		4.50					55	3.20		10	4.48
	10	4.48				9		3.10		20	4.43
	20	4.46					03	3.00		30	4.38
	30	4.43								40	4.30
	40	4.40								50	4.20
	50	4.38							12		4.12
3		4.37								10	4.06
	10	4.35								20	4.00
	20	4.32								30	3.93
	30	4.30								40	3.88
	40	4.28								50	3.84
	50	4.22							13		3.80
4		4.20								10	3.75
	10	4.15								20	3.70
	20	4.14								30	3.58
	30	4.10								35	3.52
	40	4.08								40	3.47
	50	4.04								45	3.38
5		4.00								50	3.26
	10	3.97								55	3.17
	20	3.92							14		3.04
	30	3.87								01	3.00
	40	3.82									
	50	3.78									
Watt hours				148,415			24.413			34.585	

APPENDIX 2, Table 4.5b (sheet 4)

Battery 4
Date: 3/17/53

OCV 6.36

300 amp Discharge			200 amp discharge			100 amp discharge			100 amp discharge		
min	sec	volts	min	sec	volts	min	sec	volts	min	sec	volts
0	02	4.65	5	12	start	7	53	start	14	10	3.46
	05	4.58		15	3.98	8		4.50		15	3.44
	10	4.53		20	4.00		10	4.60		20	3.42
	15	4.52		30	4.02		20	4.60		25	3.40
	20	4.50		40	4.00		30	4.63		30	3.37
	30	4.46		50	3.98		40	4.65		35	3.33
	40	4.42	6		3.94		50	4.64		40	3.30
	50	4.40		10	3.90	9		4.63		45	3.28
1		4.34		20	3.87		10	4.62		50	3.24
	10	4.30		30	3.80		20	4.61		55	3.21
	20	4.28		40	3.72		30	4.60	15		3.20
	30	4.23		50	3.68		40	4.60		05	3.18
	40	4.20	7		3.62		50	4.59		10	3.15
	50	4.18		10	3.50	10		4.57		15	3.11
2		4.13		15	3.48		10	4.56		20	3.09
	10	4.10		20	3.43		20	4.53		25	3.08
	20	4.08		25	3.38		30	4.50		30	3.05
	30	4.03		30	3.30		40	4.48		35	3.04
	40	4.00		35	3.27		50	4.46		40	3.02
	50	3.95		40	3.20	11		4.42		45	3.01
3		3.90		45	3.13		10	4.38		49	3.00
	10	3.88		50	3.05		20	4.34			
	20	3.85		53	3.00		30	4.30			
	30	3.79					40	4.25			
	40	3.72					50	4.21			
	50	3.67				12		4.18			
4		3.59					10	4.14			
	05	3.57					20	4.10			
	10	3.53					30	4.04			
	15	3.49					40	4.00			
	20	3.47					50	3.93			
	25	3.42				13		3.88			
	30	3.39					10	3.82			
	35	3.36					20	3.74			
	40	3.32					30	3.70			
	45	3.28					40	3.64			
	50	3.24					45	3.58			
	55	3.20					50	3.54			
5		3.14					55	3.52			
	05	3.09				14		3.50			
	10	3.04					05	3.47			
	12	3.00					10	3.46			

Watt hours 102.565 33.050 53.437

APPENDIX 2, Table 4.5b (sheet 5)

Battery 5
Date: 3/17/53

300 amp Discharge			200 amp discharge			100 amp discharge			100 amp discharge		
OCV		6.38									
min	sec	volts	min	sec	volts	min	sec	volts	min	sec	volts
0	02	4.70	4	20	start	6	41	start	12		3.85
	05	4.55		25	3.98		45	4.55		10	3.82
	10	4.50		30	3.99		50	4.55		20	3.78
	15	4.50		40	3.99	7		4.60		30	3.74
	20	4.48		50	3.92		10	4.60		40	3.70
	30	4.42	5		3.90		20	4.60		50	3.69
	40	4.35		10	3.85		30	4.60	13		3.65
	50	4.34		20	3.76		40	4.58		10	3.60
1		4.30		30	3.70		50	4.56		20	3.59
	10	4.28		40	3.65	8		4.55		30	3.55
	20	4.22		50	3.55		10	4.52		35	3.50
	30	4.19	6		3.40		20	4.50		40	3.49
	40	4.12		05	3.35		30	4.49		45	3.48
	50	4.08		10	3.30		40	4.48		50	3.45
2		4.02		15	3.25		50	4.45		55	3.42
	10	4.00		20	3.22	9		4.40	14		3.41
	20	3.95		25	3.20		10	4.39		05	3.39
	30	3.90		30	3.15		20	4.38		10	3.38
	40	3.85		35	3.10		30	4.35		15	3.37
	50	3.80		40	3.05		40	4.32		20	3.36
3		3.72		41	3.00		50	4.29		25	3.35
	10	3.70				10		4.25		30	3.35
	20	3.65					10	4.20		35	3.30
	30	3.55					20	4.18		40	3.29
	35	3.50					30	4.15		45	3.28
	40	3.49					40	4.12		50	3.27
	45	3.40					50	4.10		55	3.25
	50	3.30				11		4.05	15		3.22
	55	3.23					10	4.02		05	3.20
4		3.20					20	4.00		10	3.18
	05	3.13					30	3.95		15	3.15
	10	3.02					40	3.92		20	3.13
	15	3.01					50	3.89		25	3.12
	20	3.00				12		3.85		30	3.10
										35	3.09
										40	3.08
										45	3.07
										50	3.07
										55	3.06
									16		3.05
										02	3.00
Watt hours		85.240			28.360						61.225

APPENDIX 2, Table 4.5b (sheet 6)

Battery 6
Date: 3/17/53

300 amp Discharge			300 amp discharge			200 amp discharge			100 amp discharge		
OCV		6.35									
min	sec	volts	min	sec	volts	min	sec	volts	min	sec	volts
0	02	4.80	5	40	3.32	6	11	start	8	32	start
	05	4.65		45	3.28		15	3.99		40	4.45
	10	4.60		50	3.22		20	3.99		50	4.53
	15	4.59		55	3.18		30	3.98	9		4.55
	20	4.58	6		3.12		40	3.95		10	4.58
	30	4.52		05	3.08		50	3.92		20	4.58
	40	4.50		10	3.01	7		3.90		30	4.58
	50	4.49		11	3.00		10	3.82		40	4.58
1		4.43					20	3.79		50	4.58
	10	4.40					30	3.72	10		4.57
	20	4.39					40	3.65		10	4.55
	30	4.33					50	3.58		20	4.52
	40	4.30				8		3.47		30	4.50
	50	4.29					05	3.40		40	4.49
2		4.25					10	3.37		50	4.45
	10	4.22					15	3.28	11		4.39
	20	4.20					20	3.20		10	4.35
	30	4.18					25	3.18		20	4.30
	40	4.15					30	3.10		30	4.25
	50	4.10					32	3.00		40	4.22
3		4.09								50	4.18
	10	4.05							12		4.12
	20	4.01								10	4.05
	30	4.00								20	4.00
	40	3.95								30	3.99
	50	3.90								40	3.90
4		3.89								50	3.78
	10	3.82							13		3.65
	20	3.80								05	3.60
	30	3.75								10	3.50
	40	3.70								15	3.45
	50	3.65								20	3.40
5		3.60								25	3.30
	10	3.52								30	3.25
	15	3.50								35	3.20
	20	3.45								40	3.15
	25	3.42								45	3.08
	30	3.40								51	3.00
	35	3.37									
	40	3.32									
Watt hours				123.640			28.837			36.830	

APPENDIX 2, Table 4.5b (sheet 7)

Battery 11
Date: 3/17/53

300 amp Discharge			200 amp discharge			100 amp discharge			100 amp discharge		
OCV		6.30									
min	sec	volts	min	sec	volts	min	sec	volts	min	sec	volts
0	02	4.70	4	16	start	7	11	start	13		3.59
	05	4.60		20	3.90		15	4.38		10	3.55
	10	4.58		25	3.98		20	4.40		20	3.50
	15	4.55		30	3.97		30	4.49		30	3.47
	20	4.53		40	3.99		40	4.50		40	3.42
	30	4.50		50	3.97		50	4.51		50	3.40
	40	4.45	5		3.91	8		4.52	14		3.37
	50	4.40		10	3.88		10	4.51		10	3.32
1		4.37		20	3.81		20	4.50		20	3.29
	10	4.30		30	3.78		30	4.49		30	3.24
	20	4.28		40	3.71		40	4.47		35	3.22
	30	4.22		50	3.65		50	4.45		40	3.21
	40	4.20	6		3.57	9		4.42		45	3.20
	50	4.13		10	3.53		10	4.40		50	3.19
2		4.10		15	3.50		20	4.38		55	3.18
	10	4.03		20	3.44		30	4.34	15		3.16
	20	3.94		25	3.41		40	4.30		05	3.13
	30	3.88		30	3.37		50	4.27		10	3.12
	40	3.83		35	3.32	10		4.22		15	3.11
	50	3.75		40	3.28		10	4.20		20	3.10
3		3.70		45	3.24		20	4.18		25	3.09
	10	3.60		50	3.20		30	4.13		30	3.07
	20	3.53		55	3.15		40	4.10		35	3.04
	30	3.43	7		3.10		50	4.08		40	3.02
	35	3.40		05	3.07	11		4.03		45	3.00
	40	3.38		11	3.00		10	4.00			
	45	3.32					20	3.97			
	50	3.28					30	3.92			
	55	3.22					40	3.90			
4		3.18					50	3.86			
	05	3.11				12		3.82			
	10	3.07					10	3.80			
	16	3.00					20	3.73			
							30	3.69			
							40	3.66			
							50	3.61			
						13		3.59			
Watt hours		82.900			35.183						55.375

APPENDIX 2, Table 4.5b (sheet 8)

Battery 12
Date: 3/17/53

300 amp Discharge			300 amp discharge			200 amp discharge			100 amp discharge		
OCV		6.32									
min	sec	volts	min	sec	volts	min	sec	volts	min	sec	volts
0	02	5.00	6		3.83	7	21	start	9	18	start
	05	4.90		10	3.78		25	3.90		20	4.00
	10	4.88		20	3.70		30	3.98		25	4.38
	15	4.88		30	3.61		40	3.98		30	4.47
	20	4.85		40	3.53		50	3.95		40	4.50
	30	4.82		50	3.45	8		3.92		50	4.52
	40	4.80	7		3.32		10	3.90	10		4.54
	50	4.79		05	3.28		20	3.80		10	4.58
1		4.75		10	3.20		30	3.70		20	4.58
	10	4.70		15	3.10		35	3.67		30	4.57
	20	4.70		20	3.03		40	3.60		40	4.55
	30	4.66		21	3.00		45	3.52		50	4.52
	40	4.63					50	3.48	11		4.52
	50	4.60					55	3.40		10	4.50
2		4.59				9		3.33		20	4.49
	10	4.57					05	3.28		30	4.45
	20	4.53					10	3.18		40	4.42
	30	4.50					15	3.07		50	4.40
	40	4.48					18	3.00	12		4.37
	50	4.46								10	4.25
3		4.43								20	4.20
	10	4.40								30	4.10
	20	4.40								40	4.00
	30	4.39								50	3.94
	40	4.32							13		3.82
	50	4.31								10	3.72
4		4.30								15	3.68
	10	4.27								20	3.62
	20	4.22								25	3.59
	30	4.20								30	3.56
	40	4.17								35	3.53
	50	4.14								40	3.51
5		4.10								45	3.50
	10	4.08								50	3.50
	20	4.04							14		3.49
	30	3.98								10	3.47
	40	3.93								20	3.42
	50	3.90								30	3.40
6		3.83								40	3.32
										50	3.23
										55	3.21
										58	3.00
Watt hours			156.370			23.933					38.410

APPENDIX 2, Table 4.5b (sheet 9)

Battery 13
Date: 3/17/53

300 amp Discharge			300 amp discharge			200 amp discharge			100 amp discharge		
OCV		6.35									
min	sec	volts	min	sec	volts	min	sec	volts	min	sec	volts
0	02	4.98	6		3.48	6	45	start	8	43	start
	05	4.80		05	3.45		50	4.00		50	4.42
	10	4.75		10	3.40	7		3.99		55	4.45
	15	4.70		15	3.39		10	3.99	9		4.50
	20	4.70		20	3.32		20	3.92		10	4.52
	30	4.62		25	3.27		30	3.87		20	4.56
	40	4.60		30	3.20		40	3.80		30	4.57
	50	4.58		35	3.15		50	3.70		40	4.58
1		4.53		40	3.08	8		3.62		50	4.58
	10	4.50		45	3.00		10	3.50	10		4.57
	20	4.49					15	3.45		10	4.54
	30	4.45					20	3.40		20	4.50
	40	4.42					25	3.35		30	4.50
	50	4.40					30	3.26		40	4.49
2		4.39					35	3.20		50	4.43
	10	4.36					40	3.10	11		4.40
	20	4.32					43	3.00		10	4.35
	30	4.30								20	4.30
	40	4.29								30	4.22
	50	4.26								40	4.15
3		4.22								50	4.08
	10	4.20							12		3.98
	20	4.18								10	3.88
	30	4.14								20	3.80
	40	4.10								30	3.75
	50	4.09								40	3.70
4		4.05								50	3.62
	10	4.00							13		3.54
	20	3.99								05	3.49
	30	3.97								10	3.45
	40	3.90								15	3.35
	50	3.89								20	3.28
5		3.82								25	3.20
	10	3.79								30	3.08
	20	3.73								33	3.00
	30	3.69									
	40	3.62									
	50	3.56									
6		3.48									
Watt hours				138.235			24.057			33.357	

APPENDIX 2, Table 4.5b (sheet 10)

Battery 14
Date: 3/17/53

300 amp Discharge			300 amp discharge		200 amp discharge			100 amp discharge		
OCV		6.38								
min	sec	volts	min	sec volts	min	sec	volts	min	sec	volts
0	02	4.95	6	3.52	6	55	start	8	58	start
	05	4.75		05 3.50	7		3.90	9		4.40
	10	4.70		10 3.48		05	3.95		10	4.45
	15	4.70		15 3.41		10	3.96		15	4.50
	20	4.70		20 3.38		20	3.99		20	4.50
	30	4.65		25 3.35		30	3.95		30	4.51
	40	4.60		30 3.30		40	3.90		40	4.55
	50	4.59		35 3.25		50	3.80		50	4.56
1		4.56		40 3.20	8		3.75	10		4.55
	10	4.53		45 3.18		10	3.65		10	4.55
	20	4.50		50 3.08		20	3.60		20	4.51
	30	4.48		55 3.00		30	3.50		30	4.50
	40	4.45				35	3.42		40	4.49
	50	4.42				40	3.30		50	4.42
2		4.40				45	3.25	11		4.40
	10	4.38				50	3.18		10	4.32
	20	4.35				55	3.10		20	4.29
	30	4.31				58	3.00		30	4.26
	40	4.30							40	4.20
	50	4.28							50	4.12
3		4.25						12		4.10
	10	4.20							10	4.03
	20	4.20							20	3.98
	30	4.18							30	3.90
	40	4.12							40	3.75
	50	4.10							50	3.60
4		4.08						13		3.42
	10	4.05							05	3.35
	20	4.00							10	3.22
	30	3.99							15	3.15
	40	3.97							21	3.00
	50	3.90								
5		3.86								
	10	3.80								
	20	3.78								
	30	3.70								
	40	3.66								
	50	3.60								
6		3.52								
Watt hours				141.690			25.140			30.550

APPENDIX 2, Table 4.5b (sheet 11)

Battery 15
Date: 3/17/53

300 amp Discharge			300 amp discharge			200 amp discharge			100 amp discharge		
OCV		6.37									
min	sec	volts	min	sec	volts	min	sec	volts	min	sec	volts
0	02	4.90	6		3.81	7	12	start	8	24	start
	05	4.80		10	3.75		15	3.90		30	4.55
	10	4.80		20	3.70		20	3.98		35	4.60
	15	4.80		30	3.60		30	3.98		40	4.70
	20	4.80		35	3.55		40	3.88		50	4.75
	30	4.75		40	3.50		50	3.75	9		4.75
	40	4.73		45	3.44	8		3.62		10	4.75
	50	4.71		50	3.38		05	3.52		20	4.75
1		4.68		55	3.30		10	3.42		30	4.75
	10	4.65	7		3.23		15	3.30		40	4.72
	20	4.62		05	3.15		20	3.12		50	4.70
	30	4.60		10	3.03		24	3.00	10		4.68
	40	4.58		12	3.00					10	4.65
	50	4.56								20	4.60
2		4.53								30	4.55
	10	4.50								40	4.49
	20	4.48								50	4.40
	30	4.45							11		4.32
	40	4.43								10	4.22
	50	4.41								20	4.01
3		4.40								30	3.78
	10	4.37								35	3.62
	20	4.35								40	3.52
	30	4.32								45	3.43
	40	4.30								50	3.33
	50	4.28								55	3.24
4		4.24							12		3.16
	10	4.22								05	3.08
	20	4.20								10	3.00
	30	4.17									
	40	4.13									
	50	4.10									
5		4.07									
	10	4.03									
	20	4.00									
	30	3.97									
	40	3.91									
	50	3.86									
6		3.81									
Watt hours			152. 280			14.703			27.120		

APPENDIX 2, Table 4.5b (sheet 12)

Battery 16
Date: 3/17/53

300 amp Discharge			300 amp discharge			200 amp discharge			100 amp discharge		
OCV		6.30									
min	sec	volts	min	sec	volts	min	sec	volts	min	sec	volts
0	02	4.95	6		3.94	7	05	start	8	23	start
	05	4.90		10	3.86		10	3.96		25	4.00
	10	4.90		20	3.75		15	4.03		30	4.50
	15	4.90		30	3.65		20	4.03		40	4.60
	20	4.90		35	3.60		30	4.00		50	4.68
	30	4.88		40	3.51		40	3.90	9		4.70
	40	4.85		45	3.43		50	3.70		10	4.70
	50	4.82		50	3.32	8		3.50		20	4.70
1		4.80		55	3.22		05	3.40		30	4.69
	10	4.77	7		3.12		10	3.30		40	4.65
	20	4.74		05	3.00		15	3.21		50	4.62
	30	4.72					20	3.10	10		4.60
	40	4.70					23	3.00		10	4.54
	50	4.68								20	4.45
2		4.66								30	4.35
	10	4.64								40	4.25
	20	4.63								50	4.16
	30	4.61							11		4.05
	40	4.58								10	3.90
	50	4.54								20	3.72
3		4.52								30	3.52
	10	4.50								35	3.40
	20	4.48								40	3.25
	30	4.45								45	3.10
	40	4.42								50	3.02
	50	4.40								52	3.00
4		4.39									
	10	4.36									
	20	4.32									
	30	4.30									
	40	4.25									
	50	4.21									
5		4.20									
	10	4.17									
	20	4.12									
	30	4.08									
	40	4.02									
	50	4.00									
6		3.94									
Watt hours					154.365			15.953			24.812

APPENDIX 2, Table 4.5b (sheet 13)

Battery 21
Date: 3/17/53

300 amp Discharge			300 amp discharge			200 amp discharge			100 amp discharge		
OCV		6.38									
min	sec	volts	min	sec	volts	min	sec	volts	min	sec	volts
0	02	4.90	6		3.90	7	16	start	8	21	start
	05	4.88		10	3.83		20	3.85		25	4.30
	10	4.88		20	3.78		25	3.88		30	4.42
	15	4.88		30	3.69		30	3.88		40	4.50
	20	4.85		40	3.60		40	3.80		50	4.52
	30	4.82		45	3.52		50	3.70	9		4.52
	40	4.80		50	3.46	8		3.58		10	4.52
	50	4.78		55	3.40		05	3.50		20	4.50
1		4.72	7		3.30		10	3.41		30	4.48
	10	4.70		05	3.21		15	3.29		40	4.42
	20	4.70		10	3.13		20	3.14		50	4.31
	30	4.68		15	3.02		21	3.00	10		4.23
	40	4.65		16	3.00					10	4.20
	50	4.62								20	4.11
2		4.60								30	4.08
	10	4.60								40	3.97
	20	4.58								50	3.82
	30	4.54							11		3.60
	40	4.52								05	3.52
	50	4.49								10	3.40
3		4.46								15	3.38
	10	4.43								20	3.22
	20	4.42								25	3.12
	30	4.40								30	3.03
	40	4.38								31	3.00
	50	4.33									
4		4.30									
	10	4.29									
	20	4.26									
	30	4.22									
	40	4.20									
	50	4.16									
5		4.13									
	10	4.10									
	20	4.07									
	30	4.01									
	40	3.99									
	50	3.98									
6		3.90									
Watt hours				155.890			13.093				21.700

APPENDIX 2, Table 4.5b (sheet 14)

Battery 22
Date: 3/17/53

300 amp Discharge			300 amp discharge			200 amp discharge			100 amp discharge		
OCV		6.37									
min	sec	volts	min	sec	volts	min	sec	volts	min	sec	volts
0	02	5.20	6		3.85	7	10	start	8	24	start
	05	4.88		10	3.79		15	3.90		30	4.48
	10	4.88		20	3.70		20	3.92		40	4.56
	15	4.86		30	3.60		30	3.90		50	4.60
	20	4.84		35	3.52		40	3.83	9		4.60
	30	4.82		40	3.49		50	3.75		10	4.62
	40	4.80		45	3.42	8		3.62		20	4.61
	50	4.75		50	3.38		05	3.57		30	4.60
1		4.71		55	3.30		10	3.48		40	4.58
	10	4.70	7		3.22		15	3.30		50	4.54
	20	4.68		05	3.14		20	3.14	10		4.50
	30	4.65		10	3.00		24	3.00		10	4.42
	40	4.62								20	4.38
	50	4.60								30	4.32
2		4.58								40	4.27
	10	4.56								50	4.20
	20	4.50							11		4.10
	30	4.50								10	4.00
	40	4.49								20	3.88
	50	4.46								30	3.78
3		4.43								35	3.72
	10	4.41								40	3.68
	20	4.39								45	3.60
	30	4.38								50	3.52
	40	4.33								55	3.48
	50	4.32							12		3.39
4		4.30								05	3.30
	10	4.26								10	3.22
	20	4.24								15	3.10
	30	4.22								17	3.00
	40	4.21									
	50	4.20									
5		4.10									
	10	4.08									
	20	4.03									
	30	4.00									
	40	3.95									
	50	3.92									
6		3.85									
Watt hours				153.340			15.063			27.063	

APPENDIX 2, Table 4.5b (sheet 15)

Battery #23
Date: 3/17/53

300 amp Discharge

OCV 6.36

min	sec	volts
0	2	5.00
	5	4.92
	10	4.90
	15	4.90
	20	4.89
	30	4.84
	40	4.82
	50	4.78
1	00	4.76
	10	4.73
	20	4.70
	30	4.67
	40	4.60
	50	4.58
2	00	4.57
	10	4.53
	20	4.50
	30	4.47
	40	4.43
	50	4.41
3	00	4.40
	10	4.35
	20	4.32
	30	4.29
	40	4.23
	50	4.21
4	00	4.20
	10	4.18
	20	4.13
	30	4.09
	40	4.03
	50	4.00
5	00	3.98
	10	3.92
	20	3.85
	30	3.80
	40	3.75
	50	3.67
6	00	3.60
	05	3.58
	10	3.50
	15	3.43
	20	3.39
	25	3.30
	30	3.26
	35	3.18
	40	3.10
	45	3.00

Watt hours 143.235

200 amp Discharge

min	sec	volts
6	45	start
	50	3.92
	55	3.98
7	00	3.99
	10	4.00
	20	3.97
	30	3.90
	40	3.83
	50	3.78
8	00	3.67
	10	3.59
	15	3.50
	20	3.47
	25	3.38
	30	3.28
	35	3.22
	40	3.15
	44	3.00

24.440

100 amp Discharge

min	sec	volts
8	44	start
	50	4.42
	55	4.50
9	00	4.53
	10	4.58
	20	4.60
	30	4.62
	40	4.63
	50	4.61
10	00	4.60
	10	4.60
	20	4.58
	30	4.58
	40	4.53
	50	4.51
11	00	4.50
	10	4.47
	20	4.40
	30	4.33
	40	4.30
	50	4.25
12	00	4.18
	10	4.11
	20	4.06
	30	3.99
	40	3.94
	50	3.88
13	00	3.78
	10	3.72
	20	3.63
	30	3.58
	35	3.51
	40	3.49
	45	3.47
	50	3.42
	55	3.38
14	00	3.30
	05	3.20
	10	3.11
	15	3.03
	17	3.00

38.462

APPENDIX 2, Table 4.5b (sheet 16)

Battery #24
Date: 3/17/53

300 amp Discharge

OCV 6.32

min	sec	volts
0	2	5.00
	5	4.90
	10	4.88
	15	4.85
	20	4.82
	30	4.81
	40	4.80
	50	4.76
1	00	4.71
	10	4.70
	20	4.63
	30	4.60
	40	4.59
	50	4.58
2	00	4.53
	10	4.51
	20	4.48
	30	4.43
	40	4.42
	50	4.40
3	00	4.38
	10	4.35
	20	4.32
	30	4.29
	40	4.27
	50	4.22
4	00	4.20
	10	4.18
	20	4.13
	30	4.10
	40	4.03
	50	4.02
5	00	3.99
	10	3.98
	20	3.89
	30	3.82
	40	3.77
	50	3.70
6	00	3.65
	10	3.53
	20	3.44
	30	3.32
	35	3.27
	40	3.20
	45	3.12
	50	3.03
	52	3.00

200 amp Discharge

min	sec	volts
6	52	start
	55	3.95
7	00	4.00
	10	4.01
	20	4.00
	30	3.98
	40	3.91
	50	3.84
8	00	3.77
	10	3.70
	20	3.59
	30	3.48
	35	3.40
	40	3.32
	45	3.22
	50	3.13
	55	3.03
	56	3.00

100 amp Discharge

min	sec	volts
8	56	start
9	00	4.45
	10	4.51
	20	4.60
	30	4.62
	40	4.67
	50	4.62
10	00	4.63
	10	4.62
	20	4.61
	30	4.60
	40	4.59
	50	4.58
11	00	4.56
	10	4.53
	20	4.50
	30	4.47
	40	4.41
	50	4.36
12	00	4.32
	10	4.29
	20	4.22
	30	4.20
	40	4.10
	50	4.02
13	00	3.97
	10	3.88
	20	3.75
	30	3.65
	35	3.58
	40	3.52
	45	3.48
	50	3.40
	55	3.32
14	00	3.30
	05	3.22
	10	3.15
	15	3.10
	20	3.02
	21	3.00

Watt hours 144.985 25.583 37.995

APPENDIX 2, Table 4.5b (sheet 17)

Battery #27
Date: 3/17/53

300 amp Discharge

OCV 6.30

min	sec	volts
0	2	4.95
	5	4.90
	10	4.80
	15	4.90
	20	4.90
	30	4.87
	40	4.84
	50	4.80
1	00	4.78
	10	4.75
	20	4.70
	30	4.68
	40	4.66
	50	4.65
2	00	4.62
	10	4.60
	20	4.58
	30	4.55
	40	4.52
	50	4.51
3	00	4.49
	10	4.45
	20	4.41
	30	4.39
	40	4.37
	50	4.34
4	00	4.31
	10	4.28
	20	4.24
	30	4.22
	40	4.18
	50	4.15
5	00	4.12
	10	4.08
	20	4.04
	30	4.00
	40	3.90
	50	3.85
6	00	3.80
	10	3.72
	20	3.62
	30	3.50
	35	3.45
	40	3.40
	45	3.30
	50	3.24
	55	3.16
7	00	3.05
	03	3.00

200 amp Discharge

min	sec	volts
7	3	start
	10	4.00
	15	4.05
	20	4.02
	30	4.01
	40	4.00
	50	3.95
8	00	3.85
	10	3.75
	20	3.65
	30	3.50
	35	3.45
	40	3.40
	45	3.30
	50	3.20
	55	3.11
9	00	3.02
	03	3.00

100 amp Discharge

min	sec	volts
9	3	start
	05	4.10
	10	4.40
	20	4.50
	30	4.55
	40	4.58
	50	4.58
10	00	4.58
	10	4.58
	20	4.58
	30	4.55
	40	4.52
	50	4.50
11	00	4.48
	10	4.40
	20	4.34
	30	4.26
	40	4.20
	50	4.11
12	00	4.02
	10	3.98
	20	3.89
	30	3.75
	40	3.70
	50	3.58
13	00	3.45
	05	3.40
	10	3.35
	15	3.30
	20	3.25
	25	3.20
	30	3.16
	35	3.11
	40	3.07
	45	3.01
	47	3.00

Watt hours 151.605 24.577 32.268

APPENDIX 2, Table 4.5b (sheet 18)

Battery #28
Date: 3/17/53

300 amp Discharge

OCV 6.32

min	sec	volts
0	02	4.95
	05	4.95
	10	4.98
	15	4.98
	20	4.95
	30	4.92
	40	4.90
	50	4.88
1	00	4.83
	10	4.80
	20	4.80
	30	4.78
	40	4.75
	50	4.72
2	00	4.70
	10	4.68
	20	4.65
	30	4.63
	40	4.60
	50	4.58
3	00	4.55
	10	4.52
	20	4.48
	30	4.48
	40	4.45
	50	4.42
4	00	4.40
	10	4.38
	20	4.35
	30	4.31
	40	4.29
	50	4.25
5	00	4.22
	10	4.20
	20	4.16
	30	4.11
	40	4.08
	50	4.02
6	00	3.98
	10	3.90
	20	3.81
	30	3.73
	40	3.63
	50	3.50
	55	3.40
7	00	3.31
	05	3.23
	10	3.15
	15	3.03
	18	3.00

Watt hours 159.325

200 amp Discharge

min	sec	volts
7	18	start
	20	3.80
	25	4.00
	30	4.03
	40	4.03
	50	3.98
8	00	3.90
	10	3.79
	20	3.67
	30	3.53
	40	3.30
	45	3.05
	46	3.00

18.400

100 amp Discharge

min	sec	volts
8	46	start
	50	4.50
	55	4.50
9	00	4.63
	10	4.68
	20	4.70
	30	4.73
	40	4.72
	50	4.72
10	00	4.71
	10	4.70
	20	4.64
	30	4.57
	40	4.50
	50	4.45
11	00	4.40
	10	4.34
	20	4.24
	30	4.00
	35	3.90
	40	3.80
	45	3.73
	50	3.70
	55	3.70
12	00	3.68
	05	3.61
	10	3.59
	15	3.51
	20	3.48
	25	3.40
	30	3.30
	35	3.22
	40	3.17
	45	3.09
	50	3.00

28.533

APPENDIX 2, Table 4.5b (sheet 19)

Battery #29
Date: 3/17/53

300 amp Discharge

OCV 6.30

min	sec	volts
0	02	4.80
	05	4.78
	10	4.75
	15	4.75
	20	4.72
	30	4.67
	40	4.63
	50	4.56
1	00	4.52
	10	4.50
	20	4.44
	30	4.40
	40	4.34
	50	4.30
2	00	4.24
	10	4.20
	20	4.14
	30	4.09
	40	4.00
	50	3.93
3	00	3.83
	10	3.72
	20	3.62
	30	3.50
	35	3.45
	40	3.40
	45	3.35
	50	3.30
	55	3.20
4	00	3.11
	05	3.04
	09	3.00

200 amp Discharge

min	sec	volts
4	9	start
	10	4.00
	15	4.10
	20	4.10
	30	4.04
	40	4.00
	50	3.92
5	00	3.82
	10	3.74
	20	3.68
	30	3.57
	35	3.51
	40	3.48
	45	3.43
	50	3.39
	55	3.35
6	00	3.30
	05	3.27
	10	3.23
	15	3.20
	20	3.16
	25	3.12
	30	3.09
	35	3.05
	40	3.01
	45	3.00

100 amp Discharge

min	sec	volts
6	45	start
	50	4.41
7	00	4.55
	10	4.58
	20	4.58
	30	4.57
	40	4.55
	50	4.53
8	00	4.51
	10	4.48
	20	4.48
	30	4.45
	40	4.42
	50	4.39
9	00	4.36
	10	4.34
	20	4.31
	30	4.30
	40	3.28
	50	4.25
10	00	4.22
	10	4.20
	20	4.18
	30	4.14
	40	4.12
	50	4.10
11	00	4.08
	10	4.06
	20	4.04
	30	4.01
	40	4.00
	50	3.95
12	00	3.91
	10	3.89
	20	3.86
	30	3.84
	40	3.82
	50	3.80
13	00	3.78
	10	3.76
	20	3.74
	30	3.71
	40	3.70

min	sec	volts
13	50	3.68
14	00	3.66
	10	3.64
	20	3.62
	30	3.60
	40	3.58
	50	3.56
15	00	3.52
	10	3.50
	20	3.47
	30	3.43
	40	3.40
	50	3.38
16	00	3.35
	10	3.33
	20	3.30
	30	3.29
	40	3.27
	50	3.25
17	00	3.22
	10	3.18
	20	3.15
	30	3.10
	35	3.08
	40	3.08
	45	3.06
	50	3.04
	55	3.02
18	00	3.01
	05	3.01
	07	3.00

Watt hours 85.440 31.057 73.090

APPENDIX 2, Table 4.5b (sheet 29)

Battery #30
Date: 3/17/53

300 amp Discharge						200 amp Discharge			100 amp Discharge		
OCV 6.35											
min	sec	volts	min	sec	volts	min	sec	volts	min	sec	volts
						7	3	start	8	58	start
0	02	5.00	6	10	3.68		05	3.90	9	00	4.20
	05	4.90		15	3.63		10	3.91		10	4.45
	10	4.90		20	3.60		20	4.02		15	4.50
	15	4.90		25	3.54		30	4.02		20	4.58
	20	4.90		30	3.49		40	3.99		30	4.60
	30	4.87		35	3.40		50	3.89		40	4.61
	40	4.83		40	3.33	8	00	3.80		50	4.64
	50	4.80		45	3.30		05	3.75	10	00	4.65
1	00	4.79		50	3.21		10	3.71		10	4.62
	10	4.76		55	3.13		15	3.65		20	4.60
	20	4.73	7	00	3.04		20	3.60		30	4.59
	30	4.70		03	3.00		25	3.55		40	4.56
	40	4.66					30	3.50		50	4.53
	50	4.64					35	3.44	11	00	4.50
2	00	4.62					40	3.35		10	4.48
	10	4.60					45	3.28		20	4.42
	20	4.58					50	3.18		30	4.39
	30	4.55					55	3.05		40	4.33
	40	4.52					58	3.00		50	4.24
	50	4.50							12	00	4.21
3	00	4.47								10	4.15
	10	4.44								20	4.08
	20	4.41								30	4.04
	30	4.38								40	3.96
	40	4.35								50	3.85
	50	4.32							13	00	3.75
4	00	4.30								10	3.70
	10	4.28								20	3.65
	20	4.25								30	3.52
	30	4.20								35	3.45
	40	4.18								40	3.38
	50	4.12								45	3.30
5	00	4.10								50	3.20
	10	4.06								55	3.10
	20	4.00							14	00	3.04
	30	3.98								05	3.00
	40	3.90									
	50	3.82									
6	00	3.76									
	05	3.72									

Watt hours 151.245 23.653 35.593

APPENDIX 2, Table 4.5b (sheet 2D)

Battery #31
Date: 3/17/53

300 amp Discharge

OCV 6.31

min	sec	volts
		-
0	02	4.55
	05	4.40
	10	4.33
	15	4.28
	20	4.24
	30	4.18
	40	4.11
	50	4.05
1	00	4.00
	10	3.97
	20	3.88
	30	3.80
	40	3.77
	50	3.70
2	00	3.69
	10	3.62
	20	3.44
	30	3.39
	35	3.34
	40	3.25
	45	3.21
	50	3.17
	55	3.10
3	00	3.06
	03	3.00

200 amp Discharge

min	sec	volts
3	03	Start
3	05	3.98
	10	4.00
	20	4.00
	30	4.00
	40	3.98
	50	3.93
4	00	3.88
	10	3.81
	20	3.75
	30	3.70
	40	3.63
	50	3.55
5	00	3.48
	05	3.44
	10	3.40
	15	3.35
	20	3.30
	25	3.25
	30	3.20
	35	3.15
	40	3.10
	45	3.03
	46	3.00

100 amp Discharge

min	sec	volts
5	46	Start
5	50	4.40
	55	4.43
6	00	4.48
	10	4.52
	20	4.52
	30	4.52
	40	4.51
	50	4.50
7	00	4.49
	10	4.47
	20	4.43
	30	4.39
	40	4.38
	50	4.37
8	00	4.33
	10	4.30
	20	4.23
	30	4.23
	40	4.20
	50	4.18
9	00	4.12
	10	4.10
	20	4.06
	30	4.00
	40	3.99
	50	3.95
10	00	3.90
	10	3.84
	20	3.80
	30	3.78
	40	3.73
	50	3.70
11	00	3.62
	10	3.59
	20	3.53
	30	3.46
	35	3.42
	40	3.39
	45	3.37
	50	3.32

min	sec	volts
11	55	3.30
12	00	3.27
	05	3.25
	10	3.22
	15	3.20
	20	3.18
	25	3.15
	30	3.09
	35	3.05
	40	3.00

Watt hours 57.745 33.163 45.825

APPENDIX 2, Table 4.5b (sheet 22)

Battery #32
Date: 3/17/53

300 amp Discharge

OCV 6.32

min	sec	volts
0	02	4.60
	05	4.53
	10	4.50
	15	4.47
	20	4.43
	30	4.38
	40	4.32
	50	4.30
1	00	4.22
	10	4.18
	20	4.12
	30	4.10
	40	4.03
	50	4.00
2	00	3.91
	10	3.87
	20	3.80
	30	3.70
	35	3.66
	40	3.62
	45	3.59
	50	3.54
	55	3.50
3	00	3.47
	05	3.43
	10	3.40
	15	3.36
	20	3.31
	25	3.24
	30	3.20
	35	3.15
	40	3.10
	45	3.07
	50	3.02
	51	3.00

200 amp Discharge

min	sec	volts
3	51	Start
3	55	3.92
4	00	3.93
	10	3.99
	20	3.99
	30	3.96
	40	3.89
	50	3.84
5	00	3.80
	10	3.73
	20	3.69
	30	3.62
	35	3.60
	40	3.57
	50	3.50
	55	3.47
6	00	3.44
	05	3.40
	10	3.36
	15	3.32
	20	3.28
	25	3.22
	30	3.20
	35	3.17
	40	3.10
	45	3.07
	50	3.02
	51	3.00

100 amp Discharge

min	sec	volts
6	51	Start
6	55	4.35
7	00	4.42
	10	4.47
	20	4.48
	30	4.48
	40	4.49
	50	4.49
8	00	4.46
	10	4.46
	20	4.42
	30	4.40
	40	4.38
	50	4.37
9	00	4.30
	10	4.28
	20	4.27
	30	4.25
	40	4.22
	50	4.20
10	00	4.18
	10	4.14
	20	4.10
	30	4.08
	40	4.04
	50	4.02
11	00	4.00
	10	3.97
	20	3.92
	30	3.89
	40	3.84
	50	3.81
12	00	3.78
	10	3.72
	20	3.68
	30	3.62
	40	3.58
	50	3.50
13	00	3.48
	10	3.40

100 amp Discharge

min	sec	volts
		-
13	20	3.38
	30	3.30
	40	3.25
	50	3.20
14	00	3.13
	05	3.10
	10	3.07
	15	3.03
	20	3.00

Watt hours 74.700 36.180 49.413

Table 4.5c. Recovery Discharge, 5 amp rate to 4.5 volts, March 19, 1953.

Hrs.	Min.	Battery Number 1	2	3	4	5	6
OCV		6.18	6.12	6.11	6.14	6.18	6.14
0	05	6.01	6.00	6.00	6.00	6.00	6.00
0	15	6.02	6.00	6.00	6.00	6.00	6.01
0	30	6.01	6.00	6.00	6.00	6.00	6.00
1	00	6.00	5.97	5.97	5.97	5.97	5.98
1	30	6.00	5.93	5.94	5.92	5.93	5.96
2	00	5.96	5.91	5.91	5.90	5.91	5.93
2	30	5.91	5.90	5.90	5.89	5.89	5.90
3	00	5.90	5.89	5.89	5.88	5.88	5.89
3	30	5.88	5.85	5.84	5.83	5.83	5.88
4	00	5.86	5.83	5.83	5.81	5.81	5.86
4	30	5.82	5.80	5.81	5.80	5.79	5.82
5	00	5.80	5.80	5.80	5.79	5.78	5.80
5	30	5.78	5.76	5.77	5.75	5.73	5.78
6	00	5.72	5.72	5.72	5.71	5.70	5.75
6	30	5.70	5.70	5.70	5.70	5.68	5.71
7	00	5.69	5.69	5.69	5.67	5.64	5.70
7	30	5.63	5.67	5.68	5.65	5.62	5.68
8	00	5.60	5.62	5.62	5.61	5.60	5.65
8	30	5.56	5.60	5.61	5.60	5.58	5.61
8	45	5.50	5.60	5.60	5.57	5.52	5.60
9	00	5.48	5.57	5.59	5.55	5.51	5.58
9	15	5.43	5.53	5.58	5.52	5.50	5.58
9	30	5.40	5.52	5.55	5.51	5.48	5.56
9	45	5.31	5.50	5.52	5.50		
9	47					5.47	5.52
10	00	5.30	5.48	5.51	5.48	5.43	5.50
10	18	5.20	5.45	5.50	5.45		
10	20					5.40	5.50
10	30	5.18	5.40	5.48	5.42	5.33	5.48
10	45	5.08	5.39	5.45	5.40	5.33	5.45
11	00	5.01	5.33	5.43	5.39	5.30	5.40
11	18	4.90	5.00	5.40	5.32	5.23	5.38
11	30	4.82	4.10	5.38	5.29	5.20	5.32
11	45	4.70		5.32	5.20	4.90	5.25
11	55					4.50	
12	00	4.60		5.25	5.08		4.88
12	08						4.50
12	15	4.50		4.75	4.85		
12	16			4.50			
12	30				4.68		
12	48				4.50		
Watt hours		343.755	326.275	349.735	356.810	337.825	346.375

APPENDIX 2, Table 4.5c (sheet 2)

Hrs.	Min.	Battery Number 11	12	13	14	15	16
OCV		6.10	6.10	6.12	6.14	6.16	6.11
0	05	5.99	5.99	6.00	6.01	6.01	6.00
0	15	6.00	6.00	6.00	6.01	6.02	6.00
0	30	5.98	5.98	6.00	6.00	6.01	6.00
1	00	5.94	5.94	5.99	6.00	6.00	5.98
1	30	5.91	5.92	5.96	5.98	5.99	5.95
2	00	5.89	5.90	5.92	5.94	5.96	5.91
2	30	5.88	5.90	5.90	5.92	5.94	5.90
3	00	5.84	5.88	5.89	5.90	5.91	5.90
3	30	5.82	5.84	5.86	5.89	5.90	5.88
4	00	5.80	5.81	5.85	5.88	5.89	5.84
4	30	5.78	5.80	5.82	5.83	5.84	5.80
5	00	5.76	5.79	5.82	5.83	5.84	5.80
5	30	5.72	5.78	5.80	5.80	5.81	5.79
6	00	5.70	5.73	5.76	5.78	5.80	5.75
6	30	5.68	5.70	5.72	5.76	5.78	5.72
7	00	5.66	5.69	5.70	5.72	5.75	5.70
7	30	5.62	5.67	5.69	5.70	5.72	5.69
8	00	5.60	5.65	5.67	5.69	5.70	5.66
8	30	5.56	5.62	5.65	5.68	5.68	5.63
8	45	5.52	5.61	5.62	5.65	5.66	5.61
9	00	5.51	5.60	5.61	5.63	5.63	5.60
9	15	5.50	5.58	5.60	5.61	5.61	5.60
9	30	5.49	5.57	5.60	5.61	5.61	5.59
9	47	5.47	5.53				
9	48			5.59	5.60	5.60	5.55
10	00	5.43	5.52				
10	03			5.54	5.58	5.58	5.52
10	20	5.40	5.50	5.51	5.55	5.55	5.50
10	30	5.39	5.50	5.50	5.52	5.51	5.50
10	45	5.34	5.48	5.50	5.52	5.48	5.47
11	00	5.32	5.45	5.48	5.50	5.25	5.40
11	05					4.50	
11	18	5.24	5.40				
11	30	5.20	5.40	5.43	5.48		5.33
11	45	5.10	5.38	5.40	5.45		5.30
12	00	5.02	5.32	5.39	5.41		5.19
12	15	4.90	5.30	5.35	5.40		4.50
12	30	4.78	5.22	5.30	5.38		
12	45	4.60	5.18	5.25	5.32		
12	55	4.50					
13	00		5.10	5.18	5.28		
13	15		4.90	5.00	5.20		
13	18		4.50	4.50	5.12		
13	30				4.80		
13	32				4.50		
Watt hours		361.840	376.810	378.745	386.265	320.910	349.875

APPENDIX 2, Table 4.5c (sheet 3)

Hrs.	Min.	Battery Number 21	22	23	24	27	28	29	30	31	32
OCV		6.17	6.15	6.17	6.15	6.10	6.12	6.15	6.15	6.18	6.14
0	05	6.02	6.00	6.01	6.00	5.96	5.97	6.00	6.01	6.00	5.98
0	15	6.02	6.01	6.02	6.00	5.98	5.99	6.00	6.00	6.00	5.98
0	30	6.02	6.01	6.01	6.00	5.97	5.98	5.99	6.00	5.98	5.97
0	45	6.01	6.00	6.00	5.99	5.95	5.95	5.98	6.00	5.96	5.94
1	05	6.00	5.99	5.98	5.98	5.92	5.93	5.94	5.98	5.94	5.92
1	30	5.99	5.98	5.97	5.95	5.91	5.92	5.92	5.96	5.93	5.90
2	00	5.98	5.94	5.93	5.92	5.89	5.90	5.90	5.94	5.91	5.90
2	30	5.95	5.92	5.91	5.90	5.87	5.89	5.88	5.91	5.89	5.88
3	00	5.94	5.91	5.91	5.90	5.85	5.88	5.87	5.90	5.85	5.85
3	30	5.92	5.90	5.90	5.89	5.82	5.84	5.84	5.90	5.83	5.82
4	00	5.91	5.89	5.89	5.87	5.81	5.83	5.82	5.89	5.81	5.81
4	30	5.88	5.86	5.87	5.84	5.80	5.82	5.80	5.87	5.80	5.79
5	00	5.87	5.83	5.85	5.83	5.78	5.80	5.78	5.85	5.78	5.77
5	30	5.85	5.82	5.83	5.80	5.75	5.78	5.75	5.82	5.75	5.73
6	00	5.82	5.80	5.80	5.79	5.72	5.75	5.72	5.80	5.71	5.70
6	30	5.81	5.79	5.79	5.78	5.70	5.72	5.68	5.78	5.69	5.68
7	00	5.80	5.78	5.75	5.75	5.68	5.70	5.65	5.75	5.65	5.65
7	30	5.76	5.74	5.72	5.71	5.64	5.68	5.62	5.73	5.62	5.62
8	00	5.75	5.71	5.70	5.70	5.63	5.67	5.58	5.72	5.59	5.58
8	30	5.72	5.70	5.70	5.68	5.62	5.65	5.53	5.70	5.55	5.55
9	00	5.71	5.69	5.68	5.65	5.58	5.61	5.45	5.68	5.51	5.49
9	15					5.55	5.59	5.41	5.65	5.48	5.44
9	30	5.69	5.66	5.65	5.61	5.52	5.57	5.36	5.64	5.46	5.39
9	45	5.68	5.64	5.63	5.60	5.50	5.52	5.31	5.62	5.44	5.08
9	55										4.95
9	58										4.50
10	00	5.63	5.62	5.61	5.59	5.49	5.51	5.29	5.61	5.42	
10	18	5.62	5.60	5.61	5.54						
10	20					5.48	5.50	5.20	5.60	5.35	
10	35	5.60	5.59	5.60	5.52						
10	36					5.45	5.48	5.12	5.58	5.30	
10	45	5.60	5.58	5.60	5.51	5.43	5.46	5.10	5.55	5.26	
11	00	5.60	5.55	5.55	5.50	5.40	5.42	5.02	5.52	5.15	
11	15	5.60	5.53	5.52	5.48	5.38	5.40	4.98	5.51		
11	18									4.75	
11	24									4.50	
11	30	5.58	5.52	5.51	5.45						
11	32					5.35	5.36	4.88	5.51		
11	45	5.56	5.50	5.49	5.41	5.31	5.30	4.70	5.50		
12	00	5.53	5.49	5.49	5.40	5.30	4.90	4.60	5.48		
12	05						4.50				
12	10							4.50			
12	15	5.51	5.45	5.45	5.35	5.24			5.44		

Continued on following page

APPENDIX 2. Table 4.5c (sheet 4)

		Battery Number (Continued)									
Hrs.	Min.	21	22	23	24	27	28	29	30	31	32
12	35	5.50	5.40	5.40	5.30	5.15			5.42		
12	45	5.48	5.38	5.38	5.25	5.02			5.40		
13	00	5.48	5.35	5.37	5.15	4.50			5.40		
13	05				4.85						
13	15	5.45	5.30	5.35	4.50				5.35		
13	30	5.40	5.22	5.33					5.33		
13	45	5.38	4.78	5.30					5.30		
13	50		4.50								
14	00	5.35		5.25					5.25		
14	15	5.32		5.20					5.20		
14	30	5.28		5.12					5.15		
14	45	5.22		5.05					5.10		
15	00	5.07		4.82					5.00		
15	03	4.50									
15	08	3.60		4.50					4.75	at 15:15	
15	20								4.50		
		430.910		429.370		367.495					
Watt hours			395.870		378.315		345.055		434.530		
								340.655		323.675	
											285.210

APPENDIX 2
Table 4.6a

Charging data for June 1952 test batteries after 8 months storage.
Cycle 6: Charged for 4 hours at 5 amperes

TRAY Number 1

On Charge 12:45 a.m. 3/20/53

Battery	Cell	Time	Temperature	Specific Gravity	Volts
1T	1	20 Mar.	30.5	1.142	2.02
	2	8:50 a.m.	30.5	1.171	2.04
	3		30.0	1.135	2.02
2T	1		30.4	1.127	2.00
	2		30.2	1.127	2.01
	3		29.7	1.144	2.02
TRAY Number 2					
3U	1		30.0	1.107	2.00
	2		30.8	1.112	2.00
	3		30.1	1.100	1.99
4U	1		30.2	1.105	2.01
	2		30.5	1.110	2.01
	3		29.8	1.112	2.00
TRAY Number 3					
5U	1		29.8	1.126	2.02
	2		30.2	1.122	2.02
	3		29.7	1.120	2.03
6U	1		29.5	1.114	2.02
	2		29.6	1.118	2.02
	3		29.8	1.116	2.02
TRAY Number 6					
11T	1		29.0	1.117	1.99
	2		29.4	1.120	2.00
	3		29.2	1.115	1.99
12T	1		29.6	1.103	1.99
	2		29.8	1.104	1.98
	3		29.4	1.102	1.99

Off Charge 4:45 a.m. 3/20/53

APPENDIX 2
Table 4.6a Continued (Sheet 2)

TRAY Number 7

On Charge 12:45 a.m. 3/20/53

Battery	Cell	Time	Temperature	Specific Gravity	Volts
13T	1	20 Mar.	29.8	1.114	2.00
	2	9:30 a.m.	30.0	1.113	2.00
	3		29.9	1.124	2.01
14T	1		30.2	1.121	2.01
	2		30.1	1.115	2.00
	3		29.8	1.117	2.00
TRAY Number 8					
15U	1		29.9	1.142	2.04
	2		30.5	1.116	2.01
	3		30.0	1.118	2.01
16U	1		30.5	1.105	1.99
	2		30.0	1.094	1.99
	3		29.8	1.098	2.00
TRAY Number 11					
21T	1		30.0	1.112	1.97
	2		30.1	1.110	1.97
	3		29.9	1.121	1.98
22M*	1		30.2	1.113	1.98
	2		30.0	1.116	1.99
	3		29.3	1.107	1.99

Off Charge 4:45 a.m. 3/20/53

*$MgSO_4$-Na_2SO_4

Table 4.6a Continued (Sheet 3)

TRAY Number 12

On Charge 12:45 a.m. 3/20/53

Battery	Cell	Time	Temperature	Specific Gravity	Volts
23T	1	20 Mar.	30.0	1.094	1.97
	2	9:50 a.m.	30.2	1.106	1.97
	3		29.9	1.093	1.97
24U	1		30.2	1.094	1.98
	2		29.9	1.091	1.98
	3		29.3	1.094	1.98
TRAY Number 14					
27T	1		29.5	1.083	1.95
	2		29.6	1.098	1.98
	3		29.1	1.097	1.97
28U	1		29.6	1.106	1.98
	2		29.0	1.108	1.98
	3		28.4	1.097	1.98
TRAY Number 15					
29U	1		29.2	1.112	2.00
	2		29.5	1.124	2.01
	3		29.7	1.108	1.99
30T	1		29.7	1.095	1.96
	2		29.9	1.100	1.97
	3		29.2	1.092	1.97
TRAY Number 16					
31U	1		30.1	1.129	2.01
	2		30.2	1.140	2.01
	3		30.2	1.142	2.02
32T	1		30.4	1.154	2.02
	2		30.4	1.140	2.00
	3		29.8	1.152	2.02

Off Charge 4:45 a.m. 3/20/53

APPENDIX 2
Table 4.6b -

Discharge data, 6th cycle.

Battery 1
20 March 1953

Discharge rate
300 amp

OCV 6.06

Min.	Sec.	Volts
0	02	3.70
0	05	3.65
0	10	3.42
0	15	3.12
0	17	3.00

Discharge rate
200 amp

Min.	Sec.	Volts
0	17	Start
0	20	3.85
0	25	3.75
0	30	3.62
0	35	3.40
0	40	3.15
0	42	3.00

Discharge rate
100 amp

Min.	Sec.	Volts
0	42	Start
0	45	4.40
0	50	4.45
0	55	4.44
1	--	4.40
1	10	4.32
1	20	4.21
1	30	4.03
1	40	3.81
1	50	3.61
2	--	3.40
2	05	3.28
2	10	3.18
2	15	3.12
2	19	3.00

Watt Hrs.	4.885	4.877	10.480

Battery 2
20 March 1953

Discharge rate
300 amp

OCV 6.02

Min.	Sec.	Volts
0	02	3.85
0	05	3.69
0	10	3.45
0	15	3.22
0	20	3.00

Discharge rate
200 amp

Min.	Sec.	Volts
0	20	Start
0	25	3.83
0	30	3.78
0	35	3.63
0	40	3.50
0	45	3.39
0	50	3.21
0	55	3.00

Discharge rate
100 amp

Min.	Sec.	Volts
0	55	Start
1	--	4.38
1	05	4.40
1	10	4.40
1	20	4.38
1	30	4.30
1	40	4.22
1	50	4.12
2	--	4.00
2	10	3.83
2	20	3.64
2	30	3.42
2	40	3.22
2	45	3.14
2	50	3.00

Watt Hrs.	5.740	6.763	12.533

APPENDIX 2
Table 4.6b (Sheet 3)

Battery 3
20 March 1953

Discharge rate 300 amp			Discharge rate 200 amp			Discharge rate 100 amp		
OCV 6.00								
Min.	Sec.	Volts	Min.	Sec.	Volts	Min.	Sec.	Volts
0	02	4.22	0	42	Start	1	05	Start
0	05	4.15	0	45	3.81	1	10	4.50
0	10	4.09	0	50	3.78	1	15	4.52
0	15	3.98	0	55	3.65	1	25	4.53
0	20	3.85	1	--	3.40	1	30	4.51
0	25	3.72	1	05	3.00	1	40	4.43
0	30	3.60				1	50	4.30
0	35	3.40				2	--	4.03
0	40	3.17				2	05	3.85
0	42	3.00				2	10	3.62
						2	15	3.12
						2	16	3.00
Watt Hrs.		13.225			4.533			8.273

APPENDIX 2
Table 4.6b (Sheet 4)

Battery 4
20 March 1953

Discharge rate 300 amp			Discharge rate 200 amp			Discharge rate 100 amp		
OCV 6.02								
Min.	Sec.	Volts	Min.	Sec.	Volts	Min.	Sec.	Volts
0	02	3.95	0	22	Start	0	50	Start
0	05	3.73	0	25	3.83	0	55	4.45
0	10	3.58	0	30	3.78	1	--	4.48
0	15	3.38	0	35	3.65	1	10	4.47
0	20	3.15	0	40	3.48	1	20	4.40
0	22	3.00	0	45	3.28	1	30	4.32
			0	50	3.00	1	40	4.20
						1	50	4.01
						2	--	3.82
						2	10	3.61
						2	15	3.35
						2	20	3.18
						2	24	3.00
Watt Hrs.		6.450			5.467			10.548

APPENDIX 2
Table 4.6b (Sheet 5)

Battery 5
20 March 1953

Discharge rate 300 amp			Discharge rate 200 amp			Discharge rate 100 amp		
OCV 6.03								
Min.	Sec.	Volts	Min.	Sec.	Volts	Min.	Sec.	Volts
0	02	3.93	0	21	Start	0	48	Start
0	05	3.78	0	25	3.83	0	50	4.40
0	10	3.56	0	30	3.75	0	55	4.47
0	15	3.33	0	35	3.60	1	--	4.48
0	21	3.00	0	40	3.43	1	10	4.43
			0	45	3.22	1	20	4.33
			0	48	3.00	1	30	4.22
						1	40	4.05
						1	50	3.83
						2	--	3.61
						2	05	3.50
						2	10	3.39
						2	15	3.30
						2	20	3.20
						2	25	3.10
						2	30	3.02
						2	31	3.00
Watt Hrs.		6.150			5.260			11.200

APPENDIX 2
Table 4.6b (Sheet 6)

Battery 6
20 March 1953

Discharge rate 300 amp			Discharge rate 200 amp			Discharge rate 100 amp		
CCV 6.03								
Min.	Sec.	Volts	Min.	Sec.	Volts	Min.	Sec.	Volts
0	02	4.13	0	37	Start	1	08	Start
0	05	4.03	0	40	3.80	1	10	4.40
0	10	3.90	0	45	3.79	1	15	4.43
0	15	3.72	0	50	3.70	1	20	4.48
0	20	3.62	0	55	3.58	1	30	4.45
0	25	3.43	1	--	3.43	1	40	4.40
0	30	3.29	1	05	3.20	1	50	4.31
0	35	3.05	1	08	3.00	2	--	4.13
0	37	3.00				2	10	3.93
						2	15	3.75
						2	20	3.50
						2	25	3.10
						2	26	3.00
Watt Hrs.		11.180			6.087			8.997

APPENDIX 2
Table 4.6b (Sheet 7)

Battery 11
20 March 1953

Discharge rate 300 amp			Discharge rate 200 amp			Discharge rate 100 amp		
OCV 5.98								
Min.	Sec.	Volts	Min.	Sec.	Volts	Min.	Sec.	Volts
0	02	3.65	0	12	Start	0	33	Start
0	05	3.50	0	15	3.80	0	35	4.40
0	10	3.18	0	20	3.65	0	40	4.38
0	12	3.00	0	25	3.43	0	45	4.38
			0	30	3.20	0	50	4.33
			0	33	3.00	0	55	4.30
						1	--	4.23
						1	10	4.12
						1	20	4.00
						1	30	3.83
						1	35	3.78
						1	40	3.70
						1	45	3.64
						1	50	3.59
						1	55	3.50
						2	--	3.46
						2	05	3.40
						2	10	3.33
						2	15	3.28
						2	20	3.16
						2	25	3.09
						2	31	3.00
Watt Hrs.		3.400			4.023			12.422

APPENDIX 2
Table 4.6b (Sheet 8)

Battery 12
20 March 1953

Discharge rate 300 amp			Discharge rate 200 amp			Discharge rate 100 amp		
CCV 5.95								
Min.	Sec.	Volts	Min.	Sec.	Volts	Min.	Sec.	Volts
0	02	4.02	0	25	Start	0	55	Start
0	05	3.90	0	30	3.79	1	00	4.28
0	10	3.70	0	35	3.70	1	05	4.28
0	15	3.46	0	40	3.55	1	10	4.28
0	20	3.30	0	45	3.38	1	20	4.22
0	25	3.00	0	50	3.23	1	30	4.15
			0	55	3.00	1	40	4.01
						1	50	3.32
						2	---	3.50
						2	05	3.30
						2	10	3.12
						2	12	3.00
Watt Hrs.		7.460			5.740			8.365

APPENDIX 2
Table 4.6b (Sheet 9)

Battery 13
20 March 1953

Discharge rate
300 amp

OCV 6.00

Min.	Sec.	Volts
0	02	4.03
0	05	3.92
0	10	3.72
0	15	3.56
0	20	3.40
0	25	3.20
0	28	3.00

Discharge rate
200 amp

Min.	Sec.	Volts
0	28	Start
0	30	--
0	35	3.80
0	40	3.70
0	45	3.60
0	50	3.48
0	55	3.33
1	--	3.13
1	03	3.00

Discharge rate
100 amp

Min.	Sec.	Volts
1	03	Start
1	05	4.28
1	10	4.30
1	20	4.30
1	30	4.28
1	40	4.20
1	50	4.08
2	--	3.90
2	05	3.73
2	10	3.61
2	15	3.43
2	20	3.25
2	25	3.00

Watt Hrs.	8.365	6.717	9.048

APPENDIX 2
Table 4.6b (Sheet 10)

Battery 14
20 March 1953

Discharge rate 300 amp			Discharge rate 200 amp			Discharge rate 100 amp		
OCV 6.00								
Min.	Sec.	Volts	Min.	Sec.	Volts	Min.	Sec.	Volts
0	02	4.00	0	27	Start	1	03	Start
0	05	3.83	0	30	3.80	1	05	4.30
0	10	3.61	0	35	3.75	1	10	4.30
0	15	3.45	0	40	3.70	1	20	4.31
0	20	3.30	0	45	3.60	1	30	4.30
0	25	3.08	0	50	3.47	1	40	4.22
0	27	3.00	0	55	3.33	1	50	4.10
			1	--	3.13	2	--	3.98
			1	03	3.00	2	05	3.86
						2	10	3.77
						2	15	3.63
						2	20	3.48
						2	25	3.28
						2	30	3.05
						2	31	3.00
Watt Hrs.		7.915			7.003			9.732

APPENDIX 2
Table 4.6b (Sheet 11)

Battery 15
20 March 1953

Discharge rate 300 amp			Discharge rate 200 amp			Discharge rate 100 amp		
OCV 6.05								
Min.	Sec.	Volts	Min.	Sec.	Volts	Min.	Sec.	Volts
0	02	4.42	0	58	Start	1	21	Start
0	05	4.30	1	--	3.88	1	25	4.50
0	10	4.30	1	05	3.83	1	30	4.62
0	15	4.20	1	10	3.70	1	35	4.65
0	20	4.15	1	15	3.43	1	40	4.66
0	25	4.10	1	21	3.00	1	50	4.63
0	30	4.00				2	--	4.60
0	35	3.93				2	10	4.53
0	40	3.83				2	20	4.43
0	45	3.70				2	30	4.23
0	50	3.55				2	40	4.07
0	55	3.33				2	50	3.85
0	58	3.00				2	55	3.65
						3	--	3.45
						3	05	3.25
						3	10	3.05
						3	11	3.00
Watt Hrs.		19.105			4.570			12.884

APPENDIX 2
Table 4.6b (Sheet 12)

Battery 16
20 March 1953

Discharge rate 300 amp			Discharge rate 200 amp			Discharge rate 100 amp		
OCV 5.98								
Min.	Sec.	Volts	Min.	Sec.	Volts	Min.	Sec.	Volts
0	02	4.40	0	51	Start	1	06	Start
0	05	4.35	0	55	3.80	1	10	4.50
0	10	4.26	1	--	3.60	1	15	4.63
0	15	4.20	1	06	3.00	1	20	4.68
0	20	4.10				1	25	4.68
0	25	4.02				1	30	4.66
0	30	3.93				1	40	4.60
0	35	3.82				1	50	4.42
0	40	3.69				2	--	4.12
0	45	3.48				2	05	3.75
0	51	3.00				2	10	3.28
						2	13	3.00
Watt Hrs.		16.755			2.883			8.032

APPENDIX 2
Table 4.6b (Sheet 13)

Battery 21
20 March 1953

Discharge rate 300 amp			Discharge rate 200 amp			Discharge rate 100 amp		
OCV 5.93								
Min.	Sec.	Volts	Min.	Sec.	Volts	Min.	Sec.	Volts
0	02	3.83	0	20	Start	0	56	Start
0	05	3.68	0	25	3.78	1	--	4.22
0	10	3.40	0	30	3.70	1	05	4.25
0	15	3.18	0	35	3.60	1	10	4.23
0	20	3.00	0	40	3.48	1	20	4.21
			0	45	3.36	1	30	4.17
			0	50	3.22	1	40	4.08
			0	55	3.03	1	50	4.00
			0	56	3.00	2	--	3.83
						2	05	3.76
						2	10	3.70
						2	15	3.60
						2	20	3.47
						2	25	3.33
						2	30	3.20
						2	37	3.00
Watt Hrs.		5.700			6.876			10.844

APPENDIX 2
Table 4.6b (Sheet 14)

Battery 22
20 March 1953

Discharge rate
300 amp

OCV 5.97

Min.	Sec.	Volts
0	02	4.16
0	05	4.10
0	10	3.93
0	15	3.80
0	20	3.65
0	25	3.50
0	30	3.33
0	35	3.12
0	38	3.00

Watt Hrs. 11.575

Discharge rate
200 amp

Min.	Sec.	Volts
0	38	Start
0	40	3.75
0	45	3.73
0	50	3.63
0	55	3.48
1	--	3.28
1	06	3.00

5.413

Discharge rate
100 amp

Min.	Sec.	Volts
1	06	Start
1	10	4.28
1	15	4.32
1	20	4.31
1	30	4.28
1	40	4.18
1	50	4.00
2	--	3.80
2	05	3.68
2	10	3.53
2	15	3.38
2	20	3.18
2	24	3.00

8.497

APPENDIX 2
Table 4.6b (Sheet 15)

Battery 23
20 March 1953

Discharge rate 300 amp			Discharge rate 200 amp			Discharge rate 100 amp		
OCV 5.92								
Min.	Sec.	Volts	Min.	Sec.	Volts	Min.	Sec.	Volts
0	02	4.00	0	23	Start	0	54	Start
0	05	3.83	0	25	3.80	0	55	4.28
0	10	3.61	0	30	3.73	1	--	4.30
0	15	3.40	0	35	3.63	1	10	4.30
0	20	3.20	0	40	3.50	1	20	4.22
0	23	3.00	0	45	3.33	1	30	4.13
			0	50	3.14	1	40	4.06
			0	54	3.00	1	50	3.93
						2	--	3.73
						2	05	3.60
						2	10	3.50
						2	15	3.32
						2	20	3.20
						2	25	3.03
						2	26	3.00
Watt Hrs.		6,790			5.970			10.017

APPENDIX 2
Table 4.6b (Sheet 16)

Battery 24
20 March 1953

Discharge rate 300 amp			Discharge rate 200 amp			Discharge rate 100 amp		
OCV 5.97								
Min.	Sec.	Volts	Min.	Sec.	Volts	Min.	Sec.	Volts
0	02	4.25	0	39	Start	1	05	Start
0	05	4.18	0	45	3.78	1	10	4.40
0	10	4.03	0	50	3.68	1	15	4.43
0	15	3.91	0	55	3.52	1	20	4.43
0	20	3.80	1	--	3.20	1	30	4.42
0	25	3.63	1	05	3.00	1	40	4.36
0	30	3.47				1	50	4.22
0	35	3.36				2	--	4.07
0	39	3.00				2	05	3.96
						2	10	3.84
						2	15	3.72
						2	20	3.52
						2	25	3.30
						2	30	3.00
Watt Hrs.		12.235			4.993			9.580

APPENDIX 2
Table 4.6b (Sheet 17)

Battery 27
20 March 1953

Discharge rate 300 amp			Discharge rate 200 amp			Discharge rate 100 amp		
OCV 5.92								
Min.	Sec.	Volts	Min.	Sec.	Volts	Min.	Sec.	Volts
0	02	4.10	0	29	Start	0	57	Start
0	05	3.96	0	35	3.73	1	--	4.23
0	10	3.80	0	40	3.64	1	05	4.30
0	15	3.60	0	45	3.50	1	10	4.30
0	20	3.42	0	50	3.36	1	20	4.25
0	25	3.20	0	57	3.00	1	30	4.20
0	29	3.00				1	40	4.02
						1	45	3.95
						1	50	3.83
						1	55	3.70
						2	--	3.60
						2	05	3.36
						2	10	3.06
						2	11	3.00
Watt Hrs.		8.720			5.330			8.140

APPENDIX 2
Table 4.6b (Sheet 18)

Battery 28
20 March 1953

Discharge rate 300 amp			Discharge rate 200 amp			Discharge rate 100 amp		
OCV 5.98								
Min.	Sec.	Volts	Min.	Sec.	Volts	Min.	Sec.	Volts
0	02	4.43	0	52	Start	1	11	Start
0	05	4.40	0	55	3.80	1	15	4.42
0	10	4.30	1	--	3.73	1	20	4.52
0	15	4.22	1	05	3.50	1	25	4.55
0	20	4.12	1	10	3.12	1	30	4.55
0	25	4.05	1	11	3.00	1	40	4.50
0	30	3.92				1	50	4.40
0	35	3.81				2	--	4.12
0	40	3.68				2	05	4.02
0	45	3.42				2	10	3.80
0	50	3.15				2	15	3.42
0	52	3.00				2	19	3.00
Watt Hrs.		17.065			3.717			7.953

APPENDIX 2
Table 4.6b (Sheet 19)

Battery 29
20 March 1953

Discharge rate 300 amp			Discharge rate 200 amp			Discharge rate 100 amp		
OCV 6.00								
Min.	Sec.	Volts	Min.	Sec.	Volts	Min.	Sec.	Volts
0	02	4.22	0	31	Start	0	53	Start
0	05	4.16	0	35	3.80	0	55	4.40
0	10	4.03	0	40	3.70	1	--	4.53
0	15	3.90	0	45	3.48	1	05	4.53
0	20	3.70	0	50	3.22	1	10	4.53
0	25	3.48	0	53	3.00	1	20	4.48
0	31	3.00				1	30	4.33
						1	40	4.20
						1	50	4.02
						2	--	3.88
						2	10	3.70
						2	20	3.48
						2	25	3.36
						2	30	3.27
						2	35	3.19
						2	40	3.11
						2	45	3.03
						2	48	3.00
Watt Hrs. 9.805			4.253			12.540		

Battery 30
20 March 1953

OCV 5.91

Discharge rate 300 amp			Discharge rate 200 amp			Discharge rate 100 amp		
Min.	Sec.	Volts	Min.	Sec.	Volts	Min.	Sec.	Volts
0	02	3.80	0	16	Start	0	48	Start
0	05	3.60	0	20	3.76	0	50	4.20
0	10	3.30	0	25	3.66	0	55	4.23
0	15	3.05	0	30	3.51	1	00	4.24
0	16	3.00	0	35	3.42	1	10	4.21
			0	40	3.28	1	20	4.15
			0	45	3.12	1	30	4.09
			0	48	3.00	1	40	3.98
						1	50	3.84
						2	00	3.70
						2	05	3.60
						2	10	3.45
						2	15	3.33
						2	20	3.22
						2	25	3.05
						2	27	3.00
Watt Hrs.		4.580			6.070			10.638

APPENDIX 2
Table 4.6b (Sheet 21)

Battery 31
20 March 1953

Discharge rate 300 amp			Discharge rate 200 amp			Discharge rate 100 amp		
OCV 6.07								
Min.	Sec.	Volts	Min.	Sec.	Volts	Min.	Sec.	Volts
0	02	3.75	0	16	Start	0	44	Start
0	05	3.56	0	20	3.80	0	45	4.40
0	10	3.30	0	25	3.70	0	50	4.40
0	16	3.00	0	30	3.54	0	55	4.40
			0	35	3.40	1	00	4.38
			0	40	3.20	1	10	4.33
			0	44	3.00	1	20	4.29
						1	30	4.16
						1	40	4.02
						1	50	3.88
						1	55	3.78
						2	00	3.70
						2	05	3.60
						2	10	3.47
						2	15	3.35
						2	20	3.23
						2	25	3.12
						2	31	3.00
Watt Hrs.		4.560			5.380			11.682

APPENDIX 2
Table 4.6b (Sheet 22)

Battery 32
20 March 1953

Discharge rate 300 amp			Discharge rate 200 amp			Discharge rate 100 amp		
OCV 6.05								
Min.	Sec.	Volts	Min.	Sec.	Volts	Min.	Sec.	Volts
0	02	3.73	0	16	Start	0	49	Start
0	05	3.53	0	20	3.80	0	50	4.40
0	10	3.30	0	25	3.70	0	55	4.40
0	16	3.00	0	30	3.55	1	00	4.38
			0	35	3.43	1	10	4.33
			0	40	3.33	1	20	4.30
			0	45	3.18	1	30	4.22
			0	49	3.00	1	40	4.10
						1	50	4.02
						2	00	3.92
						2	10	3.78
						2	20	3.62
						2	30	3.50
						2	35	3.43
						2	40	3.34
						2	45	3.28
						2	50	3.22
						2	55	3.15
						3	00	3.11
						3	05	3.03
						3	07	3.00
Watt Hrs.		4.550			6.310			14.728

APPENDIX 2
Table 4.6c

Recovery discharge, 5 amp rate to 4.5 volts, March 24, 1953.

Hrs.	Min.	Battery Number 1	2	3	4	5	6
OCV		5.99	5.98	5.97	5.97	5.98	5.98
0	05	5.80	5.75	5.72	5.74	5.78	5.77
0	15	5.80	5.75	5.73	5.74	5.78	5.77
0	30	5.76	5.70	5.70	5.70	5.72	5.72
0	45	5.74	5.70	5.69	5.68	5.70	5.70
1	00	5.72	5.68	5.66	5.64	5.65	5.65
1	15	5.68	5.63	5.62	5.61	5.63	5.62
1	30	5.64	5.60	5.60	5.58	5.60	5.60
1	45	5.60	5.59	5.57	5.56	5.58	5.59
2	00	5.57	5.57	5.55	5.52	5.53	5.57
2	15	5.51	5.53	5.52	5.49	5.49	5.53
2	30	5.40	5.50	5.51	5.44	5.46	5.50
2	40	5.30	5.48	5.48	5.42	5.44	5.48
2	45	5.20	5.48	5.46	5.40	5.41	5.47
2	50	5.10	5.47	5.45	5.38	5.40	5.45
2	55	5.04	5.45	5.44	5.35	5.38	5.43
3	00	4.96	5.43	5.44	5.34	5.37	5.40
3	05	4.91	5.40	5.42	5.32	5.35	5.38
3	10	4.84	5.38	5.40	5.26	5.30	5.37
3	15	4.80	5.38	5.40	5.22	5.28	5.35
3	20	4.75	5.37	5.40	5.21	5.26	5.33
3	25	4.70	5.35	5.36	5.10	5.20	5.30
3	30	4.66	5.31	5.33	5.05	5.16	5.20
3	35	4.60	5.28	5.30	4.92	5.10	4.95
3	40	4.55	5.20	5.28	4.73	5.00	4.70
3	41						4.50
3	43	4.50					
3	45		5.00	5.20	4.70	4.61	
3	48		4.50			4.50	
3	49			5.01	4.50		
3	55			4.72			
3	57			4.50			
Watt Hours		100.580	105.095	110.325	104.050	104.300	101.810

Hrs.	Min.	Battery Number 11	12	13	14	15	16
OCV		5.97	5.96	5.96	5.97	5.98	5.97
0	05	5.72	5.70	5.70	5.72	5.78	5.73
0	15	5.71	5.70	5.70	5.71	5.77	5.72
0	35	5.67	5.66	5.65	5.66	5.72	5.69
0	45	5.65	5.62	5.62	5.64	5.71	5.68
1	00	5.62	5.58	5.60	5.62	5.70	5.65
1	15	5.59	5.56	5.58	5.59	5.68	5.63
1	30	5.55	5.52	5.55	5.56	5.63	5.60
1	45	5.50	5.50	5.52	5.54	5.60	5.58
2	00	5.45	5.46	5.50	5.50	5.58	5.55
2	15	5.40	5.43	5.46	5.48	5.53	5.52
2	30	5.30	5.40	5.42	5.43	5.20	5.50
2	36					4.50	
2	40	5.25	5.37	5.39	5.40		5.49
2	45	5.20	5.35	5.37	5.39		5.47
2	50	5.11	5.33	5.35	5.38		5.45
2	55	5.08	5.31	5.33	5.35		5.42
3	00	5.02	5.30	5.31	5.32		5.41
3	05	4.95	5.28	5.26	5.30		5.40
3	10	4.90	5.24	5.23	5.28		5.39
3	15	4.85	5.22	5.20	5.21		5.38
3	20	4.80	5.20	5.15	5.11		5.35
3	25	4.74	5.18	4.91	4.50		5.30
3	30	4.70	5.10	4.50			5.28
3	35	4.64	5.05				5.22
3	40	4.60	4.83				5.14
3	45	4.53	4.50				4.75
3	48	4.50					
3	50						4.50
Watt hours		101.300	101.830	95.685	93.880	72.775	105.500

APPENDIX 2
Table 4.6c (Sheet 3)

Hrs.	Min.	Battery Number 21	22	23	24	27	28	29	30	31	32
OCV		5.85	5.85	5.85	5.89	5.84	5.88	5.90	5.82	5.95	5.95
0	05	5.70	5.71	5.70	5.73	5.70	5.75	5.80	5.69	5.80	5.80
0	15	5.68	5.71	5.69	5.72	5.68	5.73	5.78	5.67	5.79	5.80
0	30	5.65	5.70	5.64	5.70	5.66	5.71	5.74	5.63	5.76	5.76
0	45	5.61	5.67	5.62	5.68	5.61	5.70	5.71	5.60	5.72	5.72
1	00	5.57	5.63	5.59	5.64	5.59	5.68	5.69	5.55	5.68	5.70
1	15	5.55	5.60	5.55	5.62	5.57	5.64	5.66	5.53	5.65	5.66
1	30	5.50	5.56	5.50	5.60	5.53	5.61	5.62	5.50	5.62	5.64
1	45	5.48	5.53	5.49	5.59	5.50	5.60	5.57	5.45	5.59	5.60
2	00	5.42	5.50	5.42	5.52	5.44	5.56	5.50	5.40	5.54	5.58
2	30	5.32	5.41	5.36	5.49	5.38	5.50	5.25	5.31	5.49	5.50
2	40	5.25	5.36	5.28	5.45	5.33	5.48	5.10	5.26	5.45	5.47
2	45	5.22	5.34	5.27	5.42	5.30	5.47	5.00	5.22	5.41	5.45
3	00	4.99	5.30	5.21	5.40	5.25	5.44	4.72	5.15	5.35	5.50
3	02	4.50									4.50 at 3:06
3	15		5.10	5.12	5.35	5.19	5.40	4.50	5.08	5.26	
3	20		4.62	5.08	5.31	5.11	5.38		5.00	5.20	
3	21		4.50								
3	25			5.00	5.29	5.07	5.35		4.98	5.16	
3	30			4.90	5.27	4.92	5.31		4.89	4.89	
3	35			4.83	5.24	4.70	5.30		4.80	4.70	
3	38					4.50				4.50	
3	40			4.70	5.21		5.29		4.63		
3	43								4.50		
3	45			4.52	5.19		5.25				
3	46			4.50							
3	50				5.12		5.12				
3	55				4.83		4.78				
3	56				4.71		4.50				
3	58				4.50						
Watt hours		82.900	92.085	101.420	108.990	98.605	108.775	88.380	99.715	100.275	86.730

APPENDIX 2
Table 4.7a.

Charging data for June 1952 - Test batteries after 8 months storage.
Cycle 7: Charged for 42 minutes at 50 amp.

24 March 1953

		Battery Number					
		1	2	3	4	5	6
Before starting charge							
OCV	Cell 1	1.94	1.90	1.90	1.91	1.93	1.92
	2	1.95	1.92	1.91	1.92	1.92	1.92
	3	1.89	1.93	1.89	1.91	1.92	1.91
Temp.	Cell 1	27.6	28.6	27.9	28.0	27.1	27.0
	2	28.0	28.0	28.5	28.1	27.7	27.3
	3	28.5	27.6	28.0	27.0	27.0	26.2
Battery voltage during charge							
	OCV	5.78	5.75	5.71	5.73	5.78	5.75
	Min.						
	2	7.32	7.08	6.80	6.96	7.00	6.85
	5	7.25	7.00	6.75	6.90	7.00	6.80
	10	7.16	6.98	6.73	6.90	7.00	6.80
	15	7.18	7.00	6.75	6.90	7.00	6.85
	20	7.22	7.00	6.80	6.98	7.05	6.90
	25	7.22	7.00	6.80	7.00	7.08	6.90
	30	7.25	7.05	6.80	7.00	7.10	6.95
	35	7.25	7.05	6.82	7.00	7.12	6.95
	40	7.25	7.05	6.85	7.05	7.15	7.00
	42	OFF					
Temperatures							
At 30 min.	Cell 1	30.0	34.0	30.2	31.8	33.8	31.3
	2	31.0	31.2	30.8	30.0	31.0	29.8
	3	35.8	31.2	31.0	31.2	30.7	28.9
At 42-50 min.	Cell 1	31.8	35.6	32.0	34.0	35.0	34.0
	2	32.8	32.4	32.0	32.0	33.0	31.0
	3	37.8	33.2	33.0	33.0	32.0	30.2
Specific Gravity *							
	Cell 1	1.170	1.158	1.133	1.145	1.156	1.146
	2	1.208	1.160	1.142	1.140	1.148	1.146
25 March 1953	3	1.177	1.180	1.123	1.133	1.141	1.140

* For temperatures see p. 7.270a

APPENDIX 2
Table 4.7 a
(Sheet 2)

24 March 1953

Battery Number

Before starting charge		11	12	13	14	15	16
	Cell 1	1.88	1.89	1.90	1.91	1.96	1.90
OCV	2	1.91	1.89	1.89	1.90	1.93	1.90
	3	1.89	1.89	1.91	1.90	1.93	1.90
	Cell 1	26.5	27.1	27.0	28.0	27.1	28.0
Temp.	2	26.7	27.3	27.8	27.8	27.7	28.5
	3	27.0	26.9	27.4	27.5	28.1	27.8
Battery voltage during charge							
	OCV	5.70	5.68	5.70	5.72	5.82	5.70
	Min.						
	2	7.20	7.00	6.90	6.90	6.85	6.90
	5	7.10	6.90	6.85	6.90	6.65	6.60
	10	7.05	6.89	6.88	6.90	6.70	6.60
	15	7.05	6.85	6.85	6.88	6.70	6.60
	20	7.10	6.90	6.90	6.95	6.75	6.65
	25	7.10	6.90	6.90	6.95	6.78	6.65
	30	7.10	6.90	6.90	6.95	6.80	6.68
	35	7.10	6.90	6.92	6.95	6.85	6.70
	40	7.12	6.90	6.95	6.95	6.88	6.75
	42	OFF					
Temperatures							
	Cell 1	33.8	31.0	31.1	32.0	31.0	31.9
At 30 min.	2	30.0	30.2	31.6	31.5	30.6	30.9
	3	30.5	31.0	32.5	31.9	31.1	30.4
	Cell 1	34.2	32.2	31.5	32.8	31.6	32.5
At 42-50 min.	2	31.2	31.5	32.2	32.0	31.5	31.8
	3	32.0	32.0	33.2	32.4	32.0	31.0
Specific gravity *							
	Cell 1	1.145	1.140	1.142	1.160	1.182	1.131
	2	1.156	1.135	1.147	1.147	1.160	1.115
25 March 1953	3	1.152	1.140	1.156	1.150	1.150	1.122

REMARKS: At 1 minute, treated gassing, untreated not gassing. At 10 minutes, treated gassing more than untreated.

* For temperatures see p. 7.270a

APPENDIX 2
Table 4.7.a
(Sheet 3)

24 March 1953

		Battery Number					
		21	22	23	24	27	28
Before starting charge							
	Cell 1	1.91	1.90	1.88	1.90	1.87	1.90
OCV	2	1.90	1.92	1.89	1.90	1.90	1.91
	3	1.90	1.90	1.89	1.90	1.90	1.90
	Cell 1	27.5	28.0	27.6	28.2	26.5	27.1
Temp.	2	27.6	27.6	27.9	27.5	27.2	26.3
	3	28.6	26.8	27.6	26.9	27.0	25.9
Battery voltage during charge							
OCV		5.72	5.72	5.69	5.73	5.70	5.72
Min.							
2		7.08	6.83	6.90	6.70	6.92	6.70
5		6.99	6.80	6.85	6.70	6.87	6.70
10		6.95	6.80	6.82	6.70	6.85	6.70
15		6.92	6.78	6.80	6.71	6.79	6.68
20		6.94	6.80	6.84	6.72	6.80	6.68
25		6.94	6.82	6.84	6.74	6.80	6.71
30		6.95	6.85	6.85	6.77	6.83	6.72
35		6.96	6.86	6.85	6.79	6.84	6.75
40		6.96	6.87	6.86	6.80	6.85	6.76
42		OFF					
Temperatures							
	Cell 1	30.6	30.6	30.0	30.8	30.3	30.0
At 30 min.	2	31.7	31.2	31.0	30.0	31.0	29.0
	3	32.0	30.3	31.4	29.8	30.4	28.8
	Cell 1	31.4	32.0		31.1		30.4
At 35 min.	2	32.7	32.2		30.8		30.0
	3	32.8	31.0		31.0		30.0
	Cell 1	31.7	32.2	30.6	32.2	30.9	31.0
At 42-48 min.	2	33.0	32.4	31.9	31.3	31.9	30.1
	3	33.0	31.4	32.1	30.8	31.3	29.8
Specific Gravity*							
	Cell 1	1.160	1.151	1.116	1.112	1.112	1.132
	2	1.162	1.156	1.142	1.118	1.131	1.140
25 March 1953	3	1.165	1.145	1.131	1.115	1.137	1.120

* For temperatures see p. 7.270a

APPENDIX 2
Table 4.7 a
(Sheet 4)

24 March 1953

		Battery Number			
		29	30	31	32
Before starting charge					
	Cell 1	1.92	1.88	1.94	1.94
OCV	2	1.94	1.90	1.94	1.93
	3	1.92	1.88	1.95	1.94
	Cell 1	27.1	27.8	27.8	28.1
Temp.	2	27.0	27.8	27.8	28.0
	3	27.3	27.0	27.9	27.2
Battery voltage during charge					
OCV		5.80	5.68	5.86	5.84
Min.					
2		6.85	7.08	7.08	7.10
5		6.82	7.00	7.10	7.10
10		6.81	6.92	7.10	7.10
15		6.80	6.87	7.10	7.06
20		6.85	6.88	7.12	7.10
25		6.88	6.86	7.14	7.10
30		6.92	6.89	7.16	7.13
35		6.94	6.89	7.18	7.15
40		6.95	6.92	7.22	7.18
42		OFF			
Temperatures					
	Cell 1	31.0		33.1	
At 30 min.	2	29.8		32.1	
	3	30.0		33.0	
	Cell 1		31.2	33.8	32.8
At 35 min.	2		32.0	32.8	34.7
	3		31.8	33.4	31.9
	Cell 1	31.6	31.5	33.3	32.1
At 42-48 min.	2	30.7	32.4	33.0	35.0
	3	31.0	32.0	34.1	32.2
Specific Gravity*					
	Cell 1	1.146	1.139	1.162	1.197
	2	1.155	1.156	1.162	1.184
25 March 1953	3	1.142	1.125	1.170	1.194

* For temperatures see p. 7.270a

APPENDIX 2

Table 4.7a (Sheet 5)

25 March 1953 TEMPERATURES

Battery	Cell 1	Cell 2	Cell 3
1	29.2	29.9	29.9
2	29.7	30.0	29.4
3	29.4	30.0	29.9
4	30.0	29.6	29.0
5	29.5	29.1	29.0
6	29.3	28.9	28.2
11	28.0	28.9	29.0
12	29.0	29.3	29.1
13	28.9	29.6	29.8
14	29.4	29.8	29.5
15	29.9	29.9	29.9
16	30.0	29.6	29.0
21	28.2	29.3	29.3
22	28.8	29.3	28.8
23	29.0	29.9	29.8
24	30.0	29.4	28.9
27	28.9	29.1	29.0
28	29.0	28.5	27.7
29	27.9	28.6	29.3
30	29.0	29.1	28.4
31	28.8	29.3	29.8
32	29.7	29.7	29.0

APPENDIX 2
Table 4.7 b - Discharge Data, Cycle 7

Battery 1
25 March 1953

Discharge rate
300 amp

OCV 6.10

Min.	Sec.	Volts
0	2	4.15
0	5	4.05
0	10	3.90
0	15	3.87
0	20	3.60
0	25	3.45
0	30	3.23
0	35	3.00

Watt Hrs. 10.685

Discharge rate
200 amp

Min.	Sec.	Volts
0	35	Start
0	40	3.91
0	45	3.85
0	50	3.75
0	55	3.63
1	00	3.50
1	5	3.32
1	10	3.14
1	14	3.00

7.683

Discharge rate
100 amp

Min.	Sec.	Volts
1	14	Start
1	20	4.55
1	25	4.60
1	30	4.59
1	40	4.58
1	50	4.52
2	00	4.43
2	10	4.35
2	20	4.25
2	30	4.16
2	40	4.08
2	50	3.96
3	00	3.85
3	10	3.74
3	20	3.62
3	30	3.51
3	35	3.44
3	40	3.38
3	45	3.33
3	50	3.28
3	55	3.23
4	00	3.15
4	5	3.11
4	10	3.03
4	14	3.00

19.657

- 7,272 -

Discharge data, cycle 7

Battery 2
25 March 1953

Discharge rate
300 amp

OCV 6.08

Min.	Sec.	Volts
0	2	4.15
0	5	4.10
0	10	3.98
0	15	3.90
0	20	3.78
0	25	3.63
0	30	3.53
0	35	3.39
0	40	3.20
0	45	3.00

Watt Hrs. 13,790

Discharge rate
200 amp

Min.	Sec.	Volts
0	45	Start
0	50	3.89
0	55	3.82
1	00	3.73
1	5	3.65
1	10	3.53
1	15	3.40
1	20	3.23
1	25	3.03
1	26	3.00

8.063

Discharge rate
100 amp

Min.	Sec.	Volts
1	26	Start
1	30	4.50
1	35	4.56
1	40	4.58
1	50	4.60
2	00	4.59
2	10	4.52
2	20	4.48
2	30	4.38
2	40	4.28
2	50	4.14
3	00	4.03
3	10	3.88
3	20	3.73
3	30	3.59
3	40	3.43
3	45	3.36
3	50	3.28
3	55	3.18
4	00	3.05
4	3	3.00

17,700

APPENDIX 2
Table 4.7 b - (Sheet 3)

Battery 3
25 March 1953

Discharge rate 300 amp			Discharge rate 200 amp			Discharge rate 100 amp		
OCV 6.02								
Min.	Sec.	Volts	Min.	Sec.	Volts	Min.	Sec.	Volts
0	2	4.42	1	6	Start	1	32	Start
0	5	4.40	1	10	3.98	1	35	4.62
0	10	4.33	1	15	3.92	1	40	4.75
0	15	4.29	1	20	3.80	1	45	4.80
0	20	4.22	1	25	3.60	1	50	4.80
0	25	4.18	1	30	3.20	2	00	4.81
0	30	4.12	1	32	3.00	2	10	4.80
0	35	4.05				2	20	4.77
0	40	3.98				2	30	4.72
0	45	3.90				2	40	4.63
0	50	3.78				2	50	4.48
0	55	3.60				3	00	4.31
1	00	3.40				3	10	3.92
1	5	3.10				3	15	3.52
1	6	3.00				3	20	3.12
						3	22	3.00
Watt Hrs.		21.935			5.273			13.710

APPENDIX 2
Table 4.7 b (Sheet 4) -

Battery 4
25 March 1953

Discharge rate 300 amp			Discharge rate 200 amp			Discharge rate 100 amp		
OCV 6.05								
Min.	Sec.	Volts	Min.	Sec.	Volts	Min.	Sec.	Volts
0	2	4.12	0	38	Start	1	18	Start
0	5	4.00	0	40	3.80	1	25	4.60
0	10	3.92	0	45	3.90	1	30	4.62
0	15	3.82	0	50	3.83	1	35	4.62
0	20	3.70	0	55	3.73	1	40	4.62
0	25	3.58	1	00	3.60	1	50	4.62
0	30	3.40	1	5	3.48	2	00	4.60
0	35	3.20	1	10	3.30	2	10	4.53
0	38	3.00	1	15	3.13	2	20	4.46
			1	18	3.00	2	30	4.39
						2	40	4.29
						2	50	4.16
						3	00	3.99
						3	5	3.89
						3	10	3.80
						3	15	3.69
						3	20	3.60
						3	25	3.44
						3	30	3.30
						3	35	3.14
						3	39	3.00
Watt Hrs.		11.650			7.927			16.338

APPENDIX 2
Table 4.7 b (Sheet 5) -

Battery 5
25 March 1953

Discharge rate
300 amp

OCV 6.09

Min.	Sec.	Volts
0	2	4.14
0	5	4.06
0	10	3.95
0	15	3.88
0	20	3.73
0	25	3.62
0	30	3.48
0	35	3.32
0	40	3.12
0	42	3.00

Watt Hrs. 12.870

Discharge rate
200 amp

Min.	Sec.	Volts
0	42	Start
0	45	4.00
0	50	3.91
0	55	3.88
1	00	3.80
1	5	3.66
1	10	3.53
1	15	3.34
1	20	3.20
1	24	3.00

8.420

Discharge rate
100 amp

Min.	Sec.	Volts
1	24	Start
1	25	4.50
1	30	4.60
1	35	4.62
1	40	4.65
1	50	4.62
2	00	4.60
2	10	4.55
2	20	4.54
2	30	4.38
2	40	4.24
2	50	4.09
3	00	3.96
3	10	3.80
3	20	3.63
3	30	3.49
3	35	3.39
3	40	3.29
3	45	3.20
3	50	3.10
3	57	3.00

17.352

APPENDIX 2
Table 4.7 b (Sheet 6) -

Battery#6
25 March 1953

Discharge rate 300 amp			Discharge rate 200 amp			Discharge rate 100 amp		
OCV 6.08								
min	sec	volts	min	sec	volts	min	sec	volts
			1	02	Start	1	38	Start
0	02	4.35	1	05	3.95	1	40	4.50
	05	4.30		10	3.92		45	4.60
	10	4.21		15	3.90		50	4.70
	15	4.13		20	3.80		55	4.70
	20	4.10		25	3.62	2	00	4.71
	25	4.00		30	3.48		10	4.71
	30	3.90		35	3.24		20	4.70
	35	3.83		38	3.00		30	4.65
	40	3.75					40	4.58
	45	3.62					50	4.48
	50	3.49				3	00	4.33
	55	3.31					10	4.12
1	00	3.13					20	3.82
	02	3.00					25	3.50
							30	3.24
							35	3.00
Watt hours		19.840			7.307			14.162

APPENDIX 2
Table 4.7 b (Sheet 7) -

Battery #31
25 March 1953

Discharge rate 300 amp		Discharge rate 200 amp		Discharge rate 100 amp	
min sec	volts	min sec	volts	min sec	volts
OCV 6.02		0 27	Start	1 05	Start
0 02	4.10	0 30	3.90	1 10	4.50
05	4.00	35	3.86	15	4.52
10	3.80	40	3.72	20	4.52
15	3.66	45	3.61	30	4.52
20	3.43	50	3.46	40	4.48
25	3.15	55	3.32	50	4.40
27	3.00	1 00	3.16	2 00	4.33
		05	3.00	10	4.24
				20	4.18
				30	4.10
				40	4.00
				50	3.92
				3 00	3.81
				05	3.72
				10	3.68
				15	3.61
				20	3.58
				25	3.51
				30	3.48
				35	3.42
				40	3.38
				45	3.30
				50	3.27
				55	3.20
				4 00	3.15
				05	3.12
				10	3.07
				17	3.00
Watt hours	8.230		7.413		20.797

APPENDIX 2
Table 4.7 b (Sheet 9) -

Battery 13
25 March 1953

Discharge rate 300 amp			Discharge rate 200 amp			Discharge rate 100 amp		
OCV 6.04								
Min.	Sec.	Volts	Min.	Sec.	Volts	Min.	Sec.	Volts
0	02	4.32	1	02	Start	1	42	Start
0	05	4.28	1	05	3.90	1	45	4.40
0	10	4.20	1	10	3.88	1	50	4.50
0	15	4.12	1	15	3.80	1	55	4.52
0	20	4.06	1	20	3.71	2	00	4.54
0	25	3.98	1	25	3.62	2	10	4.55
0	30	3.90	1	30	3.43	2	20	4.52
0	35	3.80	1	35	3.31	2	30	4.49
0	40	3.68	1	40	3.12	2	40	4.40
0	45	3.56	1	42	3.00	2	50	4.33
0	50	3.41				3	00	4.20
0	55	3.34				3	10	4.04
1	00	3.03				3	15	3.94
1	02	3.00				3	20	3.88
						3	25	3.74
						3	30	3.60
						3	35	3.42
						3	40	3.20
						3	43	3.00
Watt Hrs.		19.675			7.953			14.086

APPENDIX 2
Table 4.7 b - (Sheet 10) -

Battery 14
25 March 1953

Discharge rate 300 amp			Discharge rate 200 amp			Discharge rate 100 amp		
OCV 6.06								
Min.	Sec.	Volts	Min.	Sec.	Volts	Min.	Sec.	Volts
0	02	4.33	1	02	Start	1	43	Start
0	05	4.28	1	05	3.90	1	45	4.40
0	10	4.18	1	10	3.88	1	50	4.47
0	15	4.10	1	15	3.82	1	55	4.51
0	20	4.02	1	20	3.72	2	00	4.53
0	25	3.95	1	25	3.62	2	10	4.55
0	30	3.83	1	30	3.50	2	20	4.53
0	35	3.75	1	35	3.33	2	30	4.49
0	40	3.66	1	40	3.18	2	40	4.42
0	45	3.54	1	43	3.00	2	50	4.32
0	50	3.41				3	00	4.22
0	55	3.23				3	10	4.10
1	00	3.07				3	20	3.92
1	02	3.00				3	30	3.60
						3	35	3.38
						3	40	3.18
						3	44	3.00
Watt Hrs.		19.535			8.156			14.093

APPENDIX 2
Table 4.7 b (Sheet 11) -

Battery 15
25 March 1953

Discharge rate 300 amp			Discharge rate 200 amp			Discharge rate 100 amp		
OCV 6.10								
Min.	Sec.	Volts	Min.	Sec.	Volts	Min.	Sec.	Volts
0	02	4.63	1	43	Start	2	15	Start
0	05	4.63	1	45	4.00	2	20	4.70
0	10	4.60	1	50	4.02	2	25	4.85
0	15	4.58	1	55	3.98	2	30	4.90
0	20	4.53	2	00	3.88	2	40	4.91
0	25	4.50	2	05	3.63	2	50	4.91
0	30	4.48	2	10	3.38	3	00	4.91
0	35	4.43	2	15	3.00	3	10	4.90
0	40	4.40				3	20	4.90
0	45	4.37				3	30	4.88
0	50	4.33				3	40	4.83
0	55	4.30				3	50	4.81
1	00	4.26				4	00	4.78
1	05	4.20				4	10	4.72
1	10	4.15				4	20	4.63
1	15	4.10				4	30	4.50
1	20	4.02				4	40	4.30
1	25	3.92				4	50	4.08
1	30	3.78				5	00	3.80
1	35	3.60				5	05	3.58
1	40	3.30				5	10	3.28
1	43	3.00				5	15	3.00
Watt Hrs.		36.275			6.626			22.873

APPENDIX 2
Table 4.7 b (Sheet 12) -

Battery 16
25 Mar. 1953

Discharge rate 300 amp			Discharge rate 200 amp			Discharge rate 100 amp		
OCV 6.02								
Min.	Sec.	Volts	Min.	Sec.	Volts	Min.	Sec.	Volts
0	02	4.63	1	23	Start	1	45	Start
0	05	4.60	1	25	4.00	1	50	4.63
0	10	4.60	1	30	4.00	1	55	4.80
0	15	4.57	1	35	3.85	2	00	4.82
0	20	4.52	1	40	3.45	2	05	4.85
0	25	4.48	1	45	3.00	2	10	4.87
0	30	4.45				2	20	4.87
0	35	4.40				2	30	4.85
0	40	4.38				2	40	4.83
0	45	4.33				2	50	4.79
0	50	4.28				3	00	4.71
0	55	4.22				3	10	4.50
1	00	4.18				3	20	4.20
1	05	4.09				3	30	3.83
1	10	3.96				3	35	3.52
1	15	3.85				3	39	3.00
1	20	3.42						
1	23	3.00						
Watt Hrs.		29.545			4.510			14.395

APPENDIX 2
Table 4.7 b (Sheet 13)

Battery 21
25 March 1953

Discharge rate 300 amp			Discharge rate 200 amp			Discharge rate 100 amp		
OCV 6.02								
Min.	Sec.	Volts	Min.	Sec.	Volts	Min.	Sec.	Volts
0	02	4.40	1	08	Start	1	51	Start
0	05	4.30	1	10	3.85	1	55	4.35
0	10	4.24	1	15	3.82	2	00	4.42
0	15	4.18	1	20	3.78	2	10	4.43
0	20	4.10	1	25	3.69	2	20	4.41
0	25	4.03	1	30	3.61	2	30	4.39
0	30	3.98	1	35	3.49	2	40	4.32
0	35	3.87	1	40	3.34	2	50	4.24
0	40	3.77	1	45	3.20	3	00	4.14
0	45	3.66	1	50	3.02	3	10	3.99
0	50	3.54	1	51	3.00	3	20	3.82
0	55	3.42				3	30	3.64
1	00	3.24				3	35	3.53
1	05	3.11				3	40	3.38
1	08	3.00				3	45	3.20
						3	48	3.00
Watt Hrs.		21.635			8.429			13.213

APPENDIX 2
Table 4.7 b (Sheet 14)

Battery 22
25 March 1953

Discharge rate 300 amp			Discharge rate 200 amp			Discharge rate 100 amp		
OCV 6.02								
Min.	Sec.	Volts	Min.	Sec.	Volts	Min.	Sec.	Volts
0	02	4.50	1	12	Start	1	47	Start
0	05	4.43	1	15	3.90	1	50	4.40
0	10	4.40	1	20	3.84	1	55	4.48
0	15	4.32	1	25	3.80	2	00	4.52
0	20	4.29	1	30	3.69	2	10	4.55
0	25	4.22	1	35	3.50	2	20	4.53
0	30	4.16	1	40	3.23	2	30	4.50
0	35	4.10	1	45	3.13	2	40	4.42
0	40	4.01	1	47	3.00	2	50	4.32
0	45	3.92				3	00	4.19
0	50	3.82				3	10	4.01
0	55	3.70				3	20	3.81
1	00	3.53				3	30	3.52
1	05	3.37				3	35	3.31
1	10	3.12				3	40	3.10
1	12	3.00				3	42	3.00
Watt Hrs.		23.890			6.943			13.304

APPENDIX 2
Table 4.7 b (Sheet 15)

Battery 23
25 March 1953

Discharge rate
300 amp

OCV 6.00

Min.	Sec.	Volts
0	2	4.40
0	5	4.38
0	10	4.30
0	15	4.22
0	20	4.14
0	25	4.08
0	30	4.00
0	35	3.90
0	40	3.80
0	45	3.69
0	50	3.54
0	55	3.40
1	00	3.22
1	5	3.00

Discharge rate
200 amp

Min.	Sec.	Volts
1	5	Start
1	10	3.81
1	15	3.80
1	20	3.72
1	25	3.62
1	30	3.50
1	35	3.38
1	40	3.20
1	46	3.00

Discharge rate
100 amp

Min.	Sec.	Volts
1	46	Start
1	50	4.32
1	55	4.42
2	00	4.48
2	10	4.48
2	20	4.48
2	30	4.43
2	40	4.40
2	50	4.33
3	00	4.28
3	10	4.13
3	20	3.98
3	30	3.82
3	40	3.60
3	45	3.49
3	50	3.41
3	55	3.26
4	00	3.12
4	3	3.00

Watt Hrs.	20.995	7.997	15.535

APPENDIX 2
Table 4.7 b (Sheet 16)

Battery 24
25 March 1953

Discharge rate
300 amp

OCV 6.02

Min.	Sec.	Volts
0	2	4.50
0	5	4.43
0	10	4.42
0	15	4.36
0	20	4.30
0	25	4.24
0	30	4.20
0	35	4.12
0	40	4.08
0	45	3.98
0	50	3.90
0	55	3.79
1	00	3.63
1	5	3.47
1	10	3.23
1	14	3.00

Discharge rate
200 amp

Min.	Sec.	Volts
1	14	Start
1	15	3.90
1	20	3.92
1	25	3.91
1	30	3.80
1	35	3.78
1	40	3.50
1	45	3.33
1	51	3.00

Discharge rate
100 amp

Min.	Sec.	Volts
1	51	Start
1	55	4.50
2	00	4.60
2	10	4.68
2	20	4.70
2	30	4.70
2	40	4.67
2	50	4.60
3	00	4.54
3	10	4.48
3	20	4.38
3	30	4.22
3	40	4.03
3	50	3.80
4	00	3.48
4	5	3.28
4	10	3.08
4	12	3.00

Watt Hrs.	24.705	7.500	16.817

APPENDIX 2
Table 4.7 b (Sheet 17)

Battery 27
25 March 1953

Discharge rate
300 amp

OCV 5.98

Min.	Sec.	Volts
0	2	4.43
0	5	4.40
0	10	4.30
0	15	4.23
0	20	4.17
0	25	4.09
0	30	4.00
0	35	3.90
0	40	3.80
0	45	3.70
0	50	3.55
0	55	3.38
1	00	3.14
1	2	3.00

Discharge rate
200 amp

Min.	Sec.	Volts
1	2	Start
1	5	3.80
1	10	3.81
1	15	3.73
1	20	3.60
1	25	3.43
1	30	3.22
1	33	3.00

Discharge rate
100 amp

Min.	Sec.	Volts
1	33	Start
1	35	4.40
1	40	4.48
1	45	4.51
1	50	4.53
1	55	4.53
2	00	4.53
2	10	4.51
2	20	4.48
2	30	4.39
2	40	4.24
2	50	4.08
3	00	3.80
3	5	3.53
3	10	3.28
3	15	3.08
3	17	3.00

Watt Hrs. 20.220 6.113 12.112

APPENDIX 2
Table 4.7 b (Sheet 18)

Battery 28
25 March 1953

Discharge rate 300 amp			Discharge rate 200 amp			Discharge rate 100 amp		
CCV 6.00								
Min.	Sec.	Volts	Min.	Sec.	Volts	Min.	Sec.	Volts
0	2	4.64	1	21	Start	1	44	Start
0	5	4.62	1	25	3.90	1	45	4.50
0	10	4.60	1	30	3.88	1	50	4.70
0	15	4.57	1	35	3.70	1	55	4.80
0	20	4.50	1	40	3.40	2	00	4.81
0	25	4.44	1	44	3.00	2	10	4.82
0	30	4.41				2	20	4.83
0	35	4.38				2	30	4.81
0	40	4.31				2	40	4.80
0	45	4.26				2	50	4.73
0	50	4.26				3	00	4.68
0	55	4.12				3	10	4.43
1	00	4.03				3	20	4.30
1	5	3.92				3	30	3.98
1	10	3.83				3	35	3.60
1	15	3.52				3	40	3.12
1	20	3.13				3	41	3.00
1	21	3.00						
Watt Hrs.		28.455			4.607			14.758

APPENDIX 2
Table 4.7 b (Sheet 19)

Battery 29
25 March 1953

Discharge rate 300 amp			Discharge rate 200 amp			Discharge rate 100 amp		
OCV 6.07								
Min.	Sec.	Volts	Min.	Sec.	Volts	Min.	Sec.	Volts
0	2	4.50	1	1	Start	1	48	Start
0	5	4.47	1	5	4.00	1	50	4.58
0	10	4.40	1	10	3.98	1	55	4.67
0	15	4.36	1	15	3.90	2	00	4.70
0	20	4.30	1	20	3.77	2	10	4.73
0	25	4.23	1	25	3.63	2	20	4.73
0	30	4.16	1	30	3.51	2	30	4.71
0	35	4.10	1	35	3.40	2	40	4.69
0	40	3.97	1	40	3.28	2	50	4.62
0	45	3.80	1	45	3.13	3	00	4.53
0	50	3.60	1	48	3.00	3	10	4.43
0	55	3.33				3	20	4.38
1	1	3.00				3	30	4.30
						3	40	4.20
						3	50	4.08
						4	00	3.98
						4	10	3.89
						4	20	3.80
						4	30	3.70
						4	40	3.60
						4	50	3.51
						5	00	3.42
						5	5	3.38
						5	10	3.32
						5	15	3.25
						5	20	3.21
						5	25	3.15
						5	30	3.10
						5	36	3.00
Watt Hrs.		20.465			9.357			25.825

APPENDIX 2
Table 4.7 b (Sheet 20)

Battery 30
25 March 1953

Discharge rate
300 amp

OCV 5.98

Min.	Sec.	Volts
0	2	4.35
0	5	4.31
0	10	4.23
0	15	4.16
0	20	4.09
0	25	4.00
0	30	3.90
0	35	3.80
0	40	3.66
0	45	3.54
0	50	3.42
0	55	3.22
1	00	3.00

Discharge rate
200 amp

Min.	Sec.	Volts
1	00	Start
1	5	3.83
1	10	3.80
1	15	3.72
1	20	3.61
1	25	3.50
1	30	3.38
1	35	3.20
1	41	3.00

Discharge rate
100 amp

Min.	Sec.	Volts
1	41	Start
1	45	4.31
1	50	4.40
1	55	4.42
2	00	4.43
2	10	4.46
2	20	4.42
2	30	4.40
2	40	4.34
2	50	4.29
3	00	4.20
3	10	4.09
3	20	3.96
3	30	3.81
3	40	3.61
3	50	3.39
4	1	3.00

Watt Hrs.	19.180	8.003	15.862

Battery 31
25 March 1953

Discharge rate
300 amp

OCV 6.09

Min.	Sec.	Volts
0	2	4.12
0	5	4.02
0	10	3.90
0	15	3.80
0	20	3.68
0	25	3.53
0	30	3.38
0	35	3.18
0	38	3.00

Discharge rate
200 amp

Min.	Sec.	Volts
0	38	Start
0	40	3.90
0	45	3.90
0	50	3.82
0	55	3.70
1	00	3.60
1	5	3.48
1	10	3.30
1	15	3.12
1	17	3.00

Discharge rate
100 amp

Min.	Sec.	Volts
1	17	Start
1	20	4.49
1	25	4.57
1	30	4.59
1	40	4.60
1	50	4.59
2	00	4.53
2	10	4.49
2	20	4.40
2	30	4.32
2	40	4.22
2	50	4.12
3	00	4.01
3	5	3.93
3	10	3.89
3	15	3.80
3	20	3.72
3	25	3.64
3	30	3.58
3	35	3.49
3	40	3.40
3	45	3.31
3	50	3.23
3	55	3.13
4	1	3.00

Watt Hrs.	11.590	7.760	18.575

APPENDIX 2
Table 4.7 b (Sheet 22)

Battery 32
25 March 1953

Discharge rate
300 amp

OCV 6.10

Min.	Sec.	Volts
0	2	4.20
0	5	4.02
0	10	3.90
0	15	3.78
0	20	3.63
0	25	3.52
0	30	3.40
0	35	3.22
0	40	3.03
0	41	3.00

Discharge rate
200 amp

Min.	Sec.	Volts
0	41	Start
0	45	3.90
0	50	3.88
0	55	3.82
1	00	3.72
1	5	3.62
1	10	3.53
1	15	3.45
1	20	3.27
1	25	3.22
1	30	3.10
1	33	3.00

Discharge rate
100 amp

Min.	Sec.	Volts
1	33	Start
1	35	4.42
1	40	4.48
1	45	4.50
1	50	4.50
1	55	4.50
2	00	4.49
2	10	4.43
2	20	4.40
2	30	4.33
2	40	4.28
2	50	4.20
3	00	4.11
3	10	4.02
3	20	3.93
3	30	3.87
3	40	3.75
3	50	3.63
4	00	3.51
4	5	3.41
4	10	3.34
4	15	3.30
4	20	3.20
4	25	3.10
4	31	3.00

Watt Hrs.	12.370	10.167	19.732

APPENDIX 2
Table 4.7c

Recovery discharge, 5 amp rate to 4.5 volts

26 March 195?

Hrs.	Min.	Battery Number 1	2	3	4	5	6	11	12	13	14
OCV		6.01	6.00	5.96	5.98	6.00	6.00	5.94	5.94	5.98	5.98
	3	5.90	5.86	5.82	5.87	5.89	5.89	5.81	5.80	5.84	5.85
	30	5.88	5.85	5.81	5.83	5.87	5.86	5.80	5.79	5.82	5.82
1	00	5.81	5.80	5.78	5.79	5.80	5.80	5.73	5.74	5.76	5.78
1	30	5.79	5.76	5.75	5.75	5.75	5.78	5.69	5.69	5.71	5.71
2	00	5.72	5.71	5.71	5.71	5.71	5.72	5.65	5.67	5.69	5.69
2	30	5.67	5.68	5.66	5.67	5.66	5.69	5.59	5.60	5.61	5.61
3	00	5.60	5.60	5.60	5.60	5.59	5.61	5.50	5.50	5.53	5.53
3	30	5.48	5.52	5.52	5.51	5.49	5.54	5.40	5.42	5.45	5.46
4	00	5.20	5.38	5.41	5.41	5.35	5.45	5.21	5.30	5.30	5.33
4	10	5.00	5.30	5.40	5.38	5.25	5.40	5.11	5.22	5.21	5.23
4	20	4.75	4.60	5.38	5.30	4.60	5.32	5.03	5.17	5.00	4.00
4	21		4.50			4.50					
4	25	4.50		5.32	5.28		5.28	4.97	5.08	4.50	
4	30			5.30			5.18	4.90	4.75		
4	35			5.28	5.20		4.85	4.85	3.60		
4	40			5.20	5.10		4.70	4.78			
4	45			4.80	5.00			4.70			
4	46			4.50							
4	48				4.88			4.68			
4	50				4.75			4.60			
4	55				4.50			4.50			

	123.960	133.900	122.685	134.665	123.460	
Watt hours	122.835	137.445	130.505	125.680	119.760	

APPENDIX 2
Table 4.7c (Sheet 2)

Hrs.	Min.	Battery Number 15	16	21	22	23	24	27	28	29	30
OCV		6.00	5.94	5.92	5.93	5.91	5.92	5.90	5.91	5.98	5.90
	3	5.89	5.83								
	5			5.80	5.80	5.79	5.80	5.79	5.81	5.83	5.79
	30	5.86	5.81	5.78	5.79	5.76	5.78	5.77	5.80	5.81	5.74
1	00	5.80	5.76	5.72	5.74	5.70	5.72	5.70	5.76	5.78	5.70
1	30	5.75	5.70	5.68	5.70	5.66	5.69	5.68	5.70	5.72	5.65
2	00	5.71	5.69	5.64	5.66	5.61	5.64	5.62	5.68	5.68	5.60
2	30	5.66	5.61	5.57	5.60	5.54	5.58	5.55	5.62	5.62	5.55
3	00	5.58	5.58	5.48	5.50	5.46	5.50	5.48	5.57	5.54	5.45
3	30	5.30	5.50	5.38	5.40	5.38	5.41	5.40	5.50	5.46	5.35
3	34	4.50									
4	00		5.40	4.90	5.20	5.18	5.30	5.27	5.42	5.23	5.20
4	3			4.50							
4	5				5.15	5.12	5.28	5.24	5.40	5.15	5.13
4	10		5.31								
4	12				4.65	5.08	5.22	5.18	5.40	5.04	5.10
4	13				4.50						
4	15					5.01	5.09	5.16	5.39	4.95	5.09
4	20		5.28								
4	23					4.70	4.70	4.90	5.32	4.80	4.98
4	25		5.20								
4	27					4.60	4.50	4.70	5.30	4.70	4.90
4	28					4.50					
4	30		5.15					4.50	5.30	4.60	4.80
4	35		4.95								
4	37								5.25	4.55	4.50
4	39									4.50	
4	40		4.10								
4	43								4.90		
4	45								4.80		
4	46								4.50		
Watt Hrs.		101.570	129.545	112.605	117.510	122.960	123.450	124.370	133.265	128/535	126.620

Hrs.	Min.	31	32
OCV		6.02	6.01
	5	5.88	5.88
	30	5.85	5.86
1	00	5.79	5.80
1	30	5.74	5.76
2	00	5.70	5.71
2	30	5.65	5.66
3	00	5.56	5.52
3	30	5.45	3.40
3	50	5.20	
3	55	4.70	
3	56	4.50	

Watt Hours	31	32
	111.115	92.150

Table 5 Tallies from inspection tests

Batteries	Tallies of Judge A: Softness Pos.	Softness Neg.	Adherence	Peroxidation	Gen'l Cond.	Tallies of Judge B: Softness Pos.	Softness Neg.	Adherence	Peroxidation	Gen'l Cond
A - B	A	A	A	B	A	A	A	A	A	A
C - D	C	C	C	D	C	C	C	C	C	C
E - F	F	F	+*	F	F	F	F	F	F	F
G - H	G	G	+*	G	G	G	G	G	G	G
I - J	J	J	J	J	J	J	J	J	J	J
A - C	C	C	C	C	C	C	C	C	C	C
B - G	G	G	G	G	G	G	G	G	G	G
D - H	D	D	D	D	D	D	D	D	D	D
E - I	I	I	I	I	I	I	I	I	I	I
F - J	F	F	F	F	F	F	F	F	F	F
A - D	D	D	D	D	D	D	D	D	D	D
B - J	J	J	J	J	J	J	J	J	J	J
C - G	C	C	C	C	C	G	G	G	G	G
E - H	E	E	E	E	E	E	E	E	E	E
F - I	F	F	F	F	F	F	F	F	F	F
A - F	A F*	A F*	A F*	A F*	A F*	F	F	F	F	F
B - I	B I*	B I*	B I*	B I*	B I*	I	I	I	I	I
C - H	C	C	C	C	C	C	C	C	C	C
D - J	J	J	J	J	J	J	J	J	J	J
E - G	G	G	G	G	G	G	G	G	G	G
A - E	A	A	A	A	A	A	A	A	A	A
B - H	H	H	H	H	H	H	H	H	H	H
C - J	J	J	J	J	J	J	J	J	J	J
D - I	D	D	D	D	D	D	D	D	D	D
F - G	G	G	G	G	G	G	G	G	G	G
A - G	G	G	G	G	G	G	G	G	G	G
B - F	F	F	F	F	F	F	F	F	F	F
C - I	C	C	C	C	C	I	I	I	I	I
D - E	E	E	E	E	E	E	E	E	E	E
H - J	J	J	J	J	J	J	J	J	J	J
A - H	A	A	A	A	A	A	A	A	A	A
B - C	C B*	C B*	C B*	C B*	C B*	B	B	B	B	B
D - F	D	D	D	D	D	D	D	D	D	D
E - J	E	E	E	E	E	E	E	E	E	E
G - I	C	G	G	G	G	G	G	G	G	G
A - I	I	I	I	I	I	I	I	I	I	I
B - D	D	D	D	D	D	D	D	D	D	D
C - E	E	E	E	E	E	C	C	C	C	C
F - H	H	H	H	H	H	H	H	H	H	H
G - J	G	G	G	G	G	G	G	G	G	G
A - J	J	J	J	J	J	J	J	J	J	J
B - E	B	B	B	B	B	B	B	B	B	B
C - F	F C*	F C*	F C*	F C*	C	C	C	C	C	C
D - G	G	G	G	G	G	G	G	G	G	G
H - I	I	I	I	I	I	I	I	I	I	I

* In analysis scored as (equal).

APPENDIX 2
RAW DATA

Table 4 (Sheet 2)

Batteries	Tallies of Judge C: Softness Pos.	Softness Neg.	Adherence	Peroxidation	Gen'l Cond.	Tallies of Judge D: Softness Pos.	Softness Neg.	Adherence	Peroxidation	Gen'l Cond.
A - B	=	A	=	=	=	=	=	=	A	A
C - D	D	C	D	=	=	=	C	D	=	=
E - F	F	=	=	=	=	=	=	=	=	=
G - H	=	=	=	G	=	H	=	=	=	=
I - J	=	I	=	=	I	I	=	=	=	=
A - C	A	C	=	=	=	A	A	=	=	=
B - G	B	=	=	=	=	B	G	=	=	=
D - H	=	=	=	=	=	D	H	=	=	H
E - I	=	=	=	=	=	=	=	=	=	=
F - J	J	J	=	=	=	J	=	=	=	=
A - D	D	A	=	=	=	=	=	=	=	=
B - J	B	J	=	=	=	=	=	=	B	=
C - G	=	C	=	G	=	=	=	=	=	=
E - H	=	E	=	=	=	H	H	=	=	=
F - I	F	F	=	=	=	F	=	=	=	=
A - F	=	F	=	=	=	=	F	=	=	=
B - I	I	B	=	=	=	=	=	=	=	B
C - H	=	C	C	=	=	=	=	=	=	=
D - J	J	=	=	=	=	=	J	=	=	D
E - G	=	=	=	=	=	=	=	=	E	E
A - E	=	=	=	=	=	=	=	=	=	=*
B - H	B	B	=	=	=	=	B	=	B	H
C - J	J	J	=	=	=	=	C	=	=	=
D - I	=	=	D	=	=	=	D	=	=	=
F - G	G	G	G	=	G	=	=	=	=	F
A - G	=	=	=	=	=	=	G	=	=	=
B - F	=	=	F	=	=	F	=	=	=	B
C - I	C	C	=	=	=	=	C	=	=	C
D - E	D	=	E	=	=	=	E	=	=	=
H - J	J	=	H	=	=	H	=	=	=	H
A - H	A	=	=	=	=	=	H	=	=	=
B - C	=	=	B	=	=	=	B	=	=	=
D - F	D	=	=	=	=	D	=	=	=	D
E - J	=	J	=	=	=	=	J	=	=	=
G - I	G	G	=	=	=	=*	I**	=	=	=
A - I	=	=	=	=	=	=	I	=	=	=
B - D	B	=	=	=	=	=	=	=	=	=
C - E	=	=	=	=	=	=	=	=	=	=
F - H	=	=	H	=	=	=***	F	=	F	F
G - J	G	G	G	=	=	J	=	=	J	J
A - J	=	=	A	=	=	=	A	=	=	=
B - E	=	=	=	=	=	=	E	=	=	=
C - F	=	=	=	=	=	C	=	=	F	F
D - G	=	G	=	=	=	=	=	=	=	D
H - I	I	=	=	H	=	I	I	=	=	H

* Tally sheet read = E. ** Tally sheet read J. *** Tally sheet read = I.

Batteries	Tallies of Judge E					Tallies of Judge F				
	Softness Pos.	Softness Neg.	Adherence	Peroxidation	Gen'l Cond.	Softness Pos.	Softness Neg.	Adherence	Peroxidation	Gen'l Cond.
A - B	A	A	B	A	A	=	=	B	=	A
C - D	D	C	=	=	=	=	=	D	=	=
E - F	F	F	=	E	F	=	=	=	=	F
G - H	H	=	=	H	H	=	=	=	=	H
I - J	J	J	J	I	J	=	J	J	=	I
A - C	=	C	=	A	=	=	=	=	=	C
B - G	G	G	=	=	=	=	=	=	=	=
D - H	D	=	D	H	=	=	=	=	=	=
E - I	I	E	=	=	=	=	=	=	=	=
F - J	J	J	J	F	=	=	=	=	=	F
A - D	D	A	=	D	D	=	=	=	=	D
B - J	B	=	B	=	B	=	=	=	=	J
C - G	=	=	=	C	C	=	=	=	=	C
E - H	=	H	H	=	H	=	=	=	=	=
F - I	I	F	F	=	=	=	=	=	=	=
A - F	=	=	=	A	=	=	=	=	=	A
B - I	I	=	=	I	I	=	=	=	=	=
C - H	H	C	=	=	=	=	=	=	=	=
D - J	=	J	=	D	D	=	=	=	=	=
E - G	=	G	=	=	=	=	=	=	=	E
A - E	A	=	=	=	=	=	=	=	=	E
B - H	=	=	=	H	H	=	=	=	=	H
C - J	=	J	=	=	=	=	=	=	=	=
D - I	=	=	=	D	=	=	=	=	=	=
F - G	=	=	=	F	F	=	=	=	=	F
A - G	G	G	=	=	=	=	=	=	=	=
B - F	F	=	=	=	=	=	=	=	=	=
C - I	I	=	C	C	C	=	=	=	=	C
D - E	=	D	=	D	D	=	=	=	=	D
H - J	J	J	=	=	J	=	=	=	=	=
A - H	H	H	H	H	H	=	=	=	=	A
B - C	B	C	=	B	B	=	=	=	=	B
D - F	D	=	=	=	=	=	=	=	=	=
E - J	E	J	=	=	=	=	=	=	=	=
G - I	I	G	=	I	I	=	G	=	=	I
A - I	A	=	=	=	=	=	=	=	=	=
B - D	B	=	=	=	=	=	=	=	=	=
C - E	=	C	=	=	=	=	=	=	=	=
F - H	=	=	=	=	=	=	=	=	=	=
G - J	J	G	=	J	=	=	=	=	=	J
A - J	J	J	=	=	=	=	=	=	=	=
B - E	=	B	=	=	=	=	=	=		=
C - F	=	F	=	F	F	=	=	=	=	=
D - G	=	G	=	D	=	=	=	=	=	D
H - I	I	I	I	I	=	=	=	=	=	I

Tallies of Judge G

Batteries	Softness Pos.	Softness Neg.	Adherence	Peroxidation	Gen'l Cond.
A - B	=	=	=	A	=
C - D	=	=	=	=	=
E - F	=	=	=	=	=
G - H	=	=	=	=	=
I - J	=	=	=	I	=
A - C	=	=	=	=	=
B - G	=	=	=	=	=
D - H	=	=	=	=	=
E - I	=	=	=	=	=
F - J	=	=	=	F	=
A - D	=	=	D	D	=
B - J	=	=	=	=	=
C - G	=	=	=	=	=
E - H	=	=	=	=	=
F - I	=	F	=	=	=
A - F	=	=	=	=	=
B - I	=	=	=	=	=
C - H	=	=	=	=	=
D - J	=	=	=	D	=
E - G	=	G	=	E	=
A - E	=	=	=	=	=
B - H	=	=	=	=	=
C - J	=	=	=	=	=
D - I	=	=	=	=	=
F - G	=	F	=	F	=
A - G	=	=	=	=	=
B - F	=	F	=	=	=
C - I	=	=	=	=	=
D - E	=	D	=	=	=
H - J	=	J	=	=	=
A - H	=	=	=	=	=
B - C	=	C	=	=	=
D - F	D	=	=	=	=
E - J	=	=	=	=	=
G - I	=	=	=	I	=
A - I	I	=	=	=	=
B - D	=	=	=	=	=
C - E	=	=	=	=	=
F - H	=	=	=	F	=
G - J	=	=	=	J	=
A - J	=	J	=	=	=
B - E	=	=	=	=	=
C - F	=	=	=	F	=
D - G	=	=	=	=	=
H - I	=	=	=	I	=

Batteries	Tallies of Judge H: Softness Pos.	Softness Neg.	Adherence	Peroxidation	Gen'l Cond.	Tallies of Judge I: Softness Pos.	Softness Neg.	Adherence	Peroxidation	Gen'l Cond.
A - B	=	=	=	=	A	=	B	=	=	
C - D	D	=	=	=	=	D	C	=	=	
E - F	=	=	=	=	=	=	F	=	=	
G - H	=	=	=	=	=	=	=	=	=	
I - J	=	=	=	=	=	=	J	=	=	
A - C	=	=	=	=	=	=	=	=	=	
B - G	=	=	=	=	B	=	=	=	=	
D - H	=	=	=	=	=	H	H	=	=	
E - I	=	=	=	=	=	I	E	=	=	
F - J	=	=	=	=	F	=	J	=	=	
A - D	D	D	=	=	D	=	=	=	=	
B - J	=	B	=	=	=	B	J	=	=	
C - G	=	=	=	=	C	=	G	=	=	
E - H	H	H	=	=	H	=	=	=	=	
F - I	=	=	=	=	=	=	F	=	=	
A - F	=	=	F	=	F	=	A	=	=	
B - I	=	B	=	=	B	=	B	=	=	
C - H	=	=	=	=	=	=	=	=	=	
D - J	=	=	=	=	=	=	=	=	=	
E - C	=	=	=	=	E	E	=	=	=	
A - E	=	=	=	=	=	=	A	=	=	
B - H	=	H	B	B	=	H	H	=	=	
C - J	=	=	=	=	=	=	=	=	=	
D - I	=	I	=	=	=	I	I	=	=	
F - G	=	=	=	=	F	G	G	=	=	
A - G	=	G	=	=	G	=	G	=	=	
B - F	=	F	=	=	=	=	=	=	=	
C - I	=	=	=	=	=	=	C	=	=	
D - E	=	=	=	=	=	=	=	=	=	
H - J	H	=	=	=	J	H	J	=	=	
A - H	=	=	=	=	=	=	H	=	=	
B - C	=	=	=	=	=	=	=	=	=	
D - F	=	=	=	=	=	=	=	=	=	
E - J	=	J	=	=	=	=	=	=	=	
G - I	=	=	=	=	=	=	G	=	=	
A - I	=	=	=	=	=	=	I	=	=	
B - D	=	=	=	=	=	=	D	=	=	
C - E	=	C	=	=	=	=	=	=	=	
F - H	=	F	=	=	F	=	=	=	=	
G - J	=	=	=	=	=	=	=	=	=	
A - J	=	=	=	=	=	J	J	=	=	
B - E	=	=	=	=	=	E	=	=	=	
C - F	=	=	=	=	=	C	=	=	=	
D - G	=	=	=	=	=	=	=	=	=	
H - I	I	=	H	=	=	H	H	=	=	

Batteries	Tallies of Judge J: Softness Pos.	Softness Neg.	Adherence	Peroxidation	Gen'l Cond.	Tallies of Judge K: Softness Pos.	Softness Neg.	Adherence	Peroxidation	Gen'l Cond.
A - B	A	=	A	=	A	A	=	=	=	=
C - D	=	=	=	=	=	C	=	=	C	C
E - F	=	=	=	=	=	=	=	E	=	=
G - H	=	=	G	=	H	H	=	=	G	=
I - J	=	=	=	=	I	J	=	=	J	J
A - C	=	=	=	=	A	=	C	=	=	=
B - G	G	G	=	=	=	=	G	=	=	=
D - H	H	=	=	=	=	=	=	=	=	=
E - I	=	E	=	=	=	I	=	I	=	I
F - J	=	J	=	=	=	F	=	=	F	F
A - D	=	=	=	=	=	=	=	D	D	D
B - J	=	=	=	=	=	=	=	=	J	J
C - G	=	=	=	=	C	=	=	G	C	=
E - H	=	H	=	=	=	=	=	=	=	=
F - I	=	=	=	=	=	I	F	=	F	=
A - F	=	=	=	=	=					
B - I	=	B	=	=	=					
C - H	H	C	=	=	=					
B - J	=	J	=	=	=					
E - G	=	G	=	=	=					
A - E	E	A	=	=	E					
B - H	=	=	=	=	=					
C - J	C	=	=	=	C					
D - I	=	=	=	=	=					
F - G	G	F	=	=	F					

Could not complete inspection because of previously made appointments with Messrs. Buckley, Shanty, and Wolock, Army Chemical Center.

Table 6a INDIVIDUAL SCORES DERIVED FROM TALLIES

Judge A

Softness of Positive Plate

		7	8	19	20	26	9	10	17	18	25	Total
	7	*	-1	1	1	1	1	1	1	1	1	7
	8	1	*	1	1	-1	0	1	0	-1	1	3
T	19	-1	-1	*	1	1	0	-1	-1	-1	1	-2
	20	-1	-1	-1	*	-1	1	-1	1	-1	-1	-5
	26	-1	1	-1	1	*	-1	1	-1	1	-1	-1
	9	-1	0	0	-1	1	*	-1	-1	-1	-1	-5
	10	-1	-1	1	1	-1	1	*	1	-1	1	1
U	17	-1	0	1	-1	1	1	-1	*	1	0	1
	18	-1	1	1	1	-1	1	1	-1	*	1	3
	25	-1	-1	-1	1	1	1	-1	0	-1	*	-2

Softness of Negative Plate

		7	8	19	20	26	9	10	17	18	25	Total
	7	*	-1	1	1	1	1	1	1	1	1	7
	8	1	*	1	1	-1	0	1	0	-1	1	3
T	19	-1	-1	*	1	1	0	-1	-1	-1	1	-2
	20	-1	-1	-1	*	-1	1	-1	1	-1	-1	-5
	26	-1	1	-1	1	*	-1	1	-1	1	-1	-1
	9	-1	0	0	-1	1	*	-1	-1	-1	-1	-5
	10	-1	-1	1	1	-1	1	*	1	-1	1	1
U	17	-1	0	1	-1	1	1	-1	*	1	0	1
	18	-1	1	1	1	-1	1	1	-1	*	1	3
	25	-1	-1	-1	1	1	1	-1	0	-1	*	-2

Adherence

		7	8	19	20	26	9	10	17	18	25	Total
	7	*	-1	1	0	1	1	1	1	1	1	6
	8	1	*	1	1	-1	0	1	0	-1	1	3
T	19	-1	-1	*	1	1	0	-1	-1	-1	1	-2
	20	0	-1	-1	*	-1	1	-1	1	-1	-1	-4
	26	-1	1	-1	1	*	-1	1	0	1	-1	0
	9	-1	0	0	-1	1	*	-1	-1	-1	-1	-5
	10	-1	-1	1	1	-1	1	*	1	-1	1	1
U	17	-1	0	1	-1	0	1	-1	*	1	0	0
	18	-1	1	1	1	-1	1	1	-1	*	1	3
	25	-1	-1	-1	1	1	1	-1	0	-1	*	-2

TABLE 6a INDIVIDUAL SCORES DERIVED FROM TALLIES

Judge A (Cont'd)

Peroxidation

		7	8	19	20	26	9	10	17	18	25	Total
	7	*	-1	1	1	1	1	1	1	1	1	7
	8	1	*	1	1	-1	0	-1	0	-1	1	1
T	19	-1	-1	*	1	1	0	-1	-1	-1	1	-2
	20	-1	-1	-1	*	-1	1	-1	1	-1	-1	-5
	26	-1	1	-1	1	*	-1	1	-1	1	-1	-1
	9	-1	0	0	-1	1	*	-1	-1	-1	1	-3
	10	-1	1	1	1	-1	1	*	1	-1	1	3
U	17	-1	0	1	-1	1	1	-1	*	1	0	1
	18	-1	1	1	1	-1	1	1	-1	*	1	3
	25	-1	-1	-1	1	1	-1	-1	0	-1	*	-4

General Condition

		7	8	19	20	26	9	10	17	18	25	Total
	7	*	-1	1	1	1	1	1	1	1	1	7
	8	1	*	1	1	-1	0	1	1	-1	1	4
T	19	-1	-1	*	1	1	0	-1	-1	-1	1	-2
	20	-1	-1	-1	*	-1	1	-1	1	-1	-1	-5
	26	-1	1	-1	1	*	-1	1	-1	1	-1	-1
	9	-1	0	0	-1	1	*	-1	-1	-1	-1	-5
	10	-1	-1	1	1	-1	1	*	1	-1	1	1
U	17	-1	-1	1	-1	1	1	-1	*	1	0	0
	18	-1	1	1	1	-1	1	1	-1	*	1	3
	25	-1	-1	-1	1	1	1	-1	0	-1	*	-2

T = TREATED
U = UNTREATED

TABLE 6b INDIVIDUAL SCORES DERIVED FROM TALLIES

Judge B

Softness of Positive Plate

		7	8	19	20	26	9	10	17	18	25	Total
	7	*	1	1	1	1	1	1	1	1	1	9
	8	-1	*	-1	1	1	-1	1	1	-1	1	1
T	19	-1	1	*	1	1	1	-1	-1	-1	1	1
	20	-1	-1	-1	*	-1	1	-1	1	-1	-1	-5
	26	-1	-1	-1	1	*	-1	1	-1	1	-1	-3
	9	-1	1	-1	-1	1	*	-1	-1	-1	-1	-5
	10	-1	-1	1	1	-1	1	*	1	-1	1	1
U	17	-1	-1	1	-1	1	1	-1	*	1	1	1
	18	-1	1	1	1	-1	1	1	-1	*	1	3
	25	-1	-1	-1	1	1	1	-1	-1	-1	*	-3

Softness of Negative Plate

		7	8	19	20	26	9	10	17	18	25	Total
	7	*	1	1	1	1	1	1	1	1	1	9
	8	-1	*	-1	1	1	-1	1	1	-1	1	1
T	19	-1	1	*	1	1	1	-1	-1	-1	1	1
	20	-1	-1	-1	*	-1	1	-1	1	-1	-1	-5
	26	-1	-1	-1	1	*	-1	1	-1	1	-1	-3
	9	-1	1	-1	-1	1	*	-1	-1	-1	-1	-5
	10	-1	-1	1	1	-1	1	*	1	-1	1	1
U	17	-1	-1	1	-1	1	1	-1	*	1	1	1
	18	-1	1	1	1	-1	1	1	-1	*	1	3
	25	-1	-1	-1	1	1	1	-1	-1	-1	*	-3

Adherence

		7	8	19	20	2 6	9	10	17	18	25	Total
	7	*	1	1	1	1	1	1	1	1	1	9
	8	-1	*	-1	1	1	-1	1	1	-1	1	1
T	19	-1	1	*	1	1	1	-1	-1	-1	1	1
	20	-1	-1	-1	*	-1	1	-1	1	-1	-1	-5
	26	-1	-1	-1	1	*	-1	1	-1	1	-1	-3
	9	-1	1	-1	-1	1	*	-1	-1	-1	-1	-5
	10	-1	-1	1	1	-1	1	*	1	-1	1	1
U	17	-1	-1	1	-1	1	1	-1	*	1	1	1
	18	-1	1	1	1	-1	1	1	-1	*	1	3
	25	-1	-1	-1	1	1	1	-1	-1	-1	*	-3

TABLE 6b INDIVIDUAL SCORES DERIVED FROM TALLIES

Judge B (Cont'd)

Peroxidation

		7	8	19	20	26	9	10	17	18	25	Total
	7	*	1	1	1	1	1	1	1	1	1	9
	8	-1	*	-1	1	1	-1	1	1	-1	1	1
T	19	-1	1	*	1	1	1	-1	-1	-1	1	1
	20	-1	-1	-1	*	-1	1	-1	1	-1	-1	-5
	26	-1	-1	-1	1	*	-1	1	-1	1	-1	-3
	9	-1	1	-1	-1	1	*	-1	-1	-1	-1	-5
	10	-1	-1	1	1	-1	1	*	1	-1	1	1
U	17	-1	-1	1	-1	1	1	-1	*	1	1	1
	18	-1	1	1	1	-1	1	1	-1	*	1	3
	25	-1	-1	-1	1	1	1	-1	-1	-1	*	-3

General Condition

		7	8	19	20	26	9	10	17	18	25	Total
	7	*	1	1	1	1	1	1	1	1	1	9
	8	-1	*	-1	1	1	-1	1	1	-1	1	1
T	19	-1	1	*	1	1	1	-1	-1	-1	1	1
	20	-1	-1	-1	*	-1	1	-1	1	-1	-1	-5
	26	-1	-1	-1	1	*	-1	1	-1	1	-1	-3
	9	-1	1	-1	-1	1	*	-1	-1	-1	-1	-5
	10	-1	-1	1	1	-1	1	*	1	-1	1	1
U	17	-1	-1	1	-1	1	1	-1	*	1	1	1
	18	-1	1	1	1	-1	1	1	-1	*	1	3
	25	-1	-1	-1	1	1	1	-1	-1	-1	*	-3

T = TREATED
U = UNTREATED

TABLE 6c INDIVIDUAL SCORES DERIVED FROM TALLIES

Judge C

Softness of Positive Plate

		7	8	19	20	26	9	10	17	18	25	Total
	7	*	0	1	0	0	-1	0	1	1	0	2
	8	0	*	1	0	0	0	-1	0	-1	-1	-2
T	19	-1	-1	*	1	0	1	0	-1	0	0	-1
	20	0	0	-1	*	0	-1	0	0	-1	-1	-4
	26	0	0	0	0	*	0	-1	-1	0	0	-2
	9	1	0	-1	1	0	*	1	0	1	0	3
	10	0	1	0	0	1	-1	*	1	-1	1	2
U	17	-1	0	1	0	1	0	-1	*	-1	0	-1
	18	-1	1	0	1	0	-1	1	1	*	0	2
	25	0	1	0	1	0	0	-1	0	0	*	1

Softness of Negative Plate

		7	8	19	20	26	9	10	17	18	25	Total
	7	*	-1	1	0	0	0	1	1	1	0	3
	8	1	*	1	1	0	0	1	0	-1	1	4
T	19	-1	-1	*	0	0	-1	0	-1	1	0	-3
	20	0	-1	0	*	-1	-1	0	0	0	0	-3
	26	0	0	0	1	*	0	0	0	-1	0	0
	9	0	0	1	1	0	*	0	0	-1	-1	0
	10	-1	-1	0	0	0	0	*	0	0	-1	-3
U	17	-1	0	1	0	0	0	0	*	-1	1	0
	18	-1	1	-1	0	1	1	0	1	*	0	2
	25	0	-1	0	0	0	1	1	-1	0	*	0

Adherence

		7	8	19	20	26	9	10	17	18	25	Total
	7	*	0	0	0	0	0	0	1	1	0	2
	8	0	*	0	1	0	-1	-1	0	0	0	-1
T	19	0	0	*	0	0	0	-1	0	0	0	-1
	20	0	-1	0	*	0	0	0	1	1	0	1
	26	0	0	0	0	*	0	1	0	0	0	1
	9	0	1	0	0	0	*	0	-1	0	0	0
	10	0	1	1	0	-1	0	*	0	0	0	1
U	17	-1	0	0	-1	0	1	0	*	0	0	-1
	18	-1	0	0	-1	0	0	0	0	*	-1	-3
	25	0	0	0	0	0	0	0	0	1	*	1

Table 3

TABLE 6c INDIVIDUAL SCORES DERIVED FROM TALLIES

Judge C (Cont'd)

Peroxidation

		7	8	19	20	26	9	10	17	18	25	Total
	7	*	1	0	1	0	0	0	0	0	0	2
	8	-1	*	0	0	0	0	0	0	0	0	-1
T	19	0	0	*	-1	0	0	0	0	0	0	-1
	20	-1	0	1	*	0	0	0	0	0	0	0
	26	0	0	0	0	*	0	0	0	0	0	0
	9	0	0	0	0	0	*	0	0	0	0	0
	10	0	0	0	0	0	0	*	0	0	0	0
U	17	0	0	0	0	0	0	0	*	0	0	0
	18	0	0	0	0	0	0	0	0	*	0	0
	25	0	0	0	0	0	0	0	0	0	*	0

General Condition

		7	8	19	20	26	9	10	17	18	25	Total
	7	*	0	0	0	0	0	0	1	0	0	1
	8	0	*	0	0	0	0	0	0	0	0	0
T	19	0	0	*	0	0	0	0	0	1	0	1
	20	0	0	0	*	0	0	0	0	0	0	0
	26	0	0	0	0	*	0	0	0	0	0	0
	9	0	0	0	0	0	*	0	0	0	0	0
	10	0	0	0	0	0	0	*	0	0	0	0
U	17	-1	0	0	0	0	0	0	*	0	0	-1
	18	0	0	-1	0	0	0	0	0	*	0	-1
	25	0	0	0	0	0	0	0	0	0	*	0

T = TREATED
U = UNTREATED

TABLE 6d INDIVIDUAL SCORES DERIVED FROM TALLIES

Judge D

Softness of Positive Plate

		7	8	19	20	26	9	10	17	18	25	Total
	7	*	0	0	-1	0	-1	0	0	-1	0	-3
	8	0	*	0	0	0	0	0	1	0	-1	0
T	19	0	0	*	1	0	0	0	-1	1	0	1
	20	1	0	-1	*	1	0	-1	0	1	0	1
	26	0	0	0	-1	*	0	0	0	0	0	-1
	9	1	0	0	0	0	*	0	-1	0	0	0
	10	0	0	0	1	0	0	*	1	0	0	2
U	17	0	-1	1	0	0	1	-1	*	-1	0	-1
	18	1	0	-1	-1	0	0	0	1	*	0	0
	25	0	1	0	0	0	0	0	0	0	*	1

Softness of Negative Plate

		7	8	19	20	26	9	10	17	18	25	Total
	7	*	0	-1	0	0	1	0	0	0	1	1
	8	0	*	1	0	0	-1	1	0	1	-1	1
T	19	1	-1	*	1	0	0	-1	0	0	1	1
	20	0	0	-1	*	1	-1	1	-1	0	1	0
	26	0	0	0	-1	*	1	1	0	-1	0	0
	9	-1	1	0	1	-1	*	0	0	0	0	0
	10	0	-1	1	-1	-1	0	*	0	-1	0	-3
U	17	0	0	0	1	0	0	0	*	0	1	2
	18	0	-1	0	0	1	0	1	0	*	-1	0
	25	-1	1	-1	-1	0	0	0	-1	1	*	-2

Adherence

		7	8	19	20	26	9	10	17	18	25	Total
	7	*	0	0	0	0	0	0	0	0	0	0
	8	0	*	0	0	0	0	-1	0	0	0	-1
T	19	0	0	*	0	0	0	0	0	0	0	0
	20	0	0	0	*	0	0	0	0	0	0	0
	26	0	0	0	0	*	0	0	0	0	0	0
	9	0	0	0	0	0	*	0	0	0	0	0
	10	0	1	0	0	0	0	*	0	0	0	1
U	17	0	0	0	0	0	0	0	*	0	0	0
	18	0	0	0	0	0	0	0	0	*	0	0
	25	0	0	0	0	0	0	0	0	0	*	0

APPENDIX 2 (sheet 2)

TABLE 6d INDIVIDUAL SCORES DERIVED FROM TALLIES

Judge D (Cont'd)

Peroxidation

		7	8	19	20	26	9	10	17	18	25	Total
	7	*	0	0	0	-1	0	0	0	-1	0	-2
	8	0	*	0	0	0	0	0	-1	0	0	-1
T	19	0	0	*	0	0	0	0	0	0	0	0
	20	0	0	0	*	0	-1	0	-1	0	0	-2
	26	1	0	0	0	*	0	0	0	0	0	1
	9	0	0	0	1	0	*	0	0	1	-1	1
	10	0	0	0	0	0	0	*	0	0	0	0
U	17	0	1	0	1	0	0	0	*	0	0	2
	18	1	0	0	0	0	-1	0	0	*	0	0
	25	0	0	0	0	0	1	0	0	0	*	1

General Condition

		7	8	19	20	26	9	10	17	18	25	Total
	7	*	0	0	0	-1	0	-1	-1	-1	0	-4
	8	0	*	1	0	0	0	0	-1	0	0	0
T	19	0	-1	*	-1	0	-1	0	0	0	0	-3
	20	0	0	1	*	0	1	1	-1	1	0	3
	26	1	0	0	0	*	0	0	0	0	0	1
	9	0	0	1	-1	0	*	0	1	0	-1	0
	10	1	0	0	-1	0	0	*	1	1	0	2
U	17	1	1	0	1	0	-1	-1	*	0	0	1
	18	1	0	0	-1	0	0	-1	0	*	0	-1
	25	0	0	0	0	0	1	0	0	0	*	1

T = TREATED
U = UNTREATED

APPENDIX 2

TABLE 6e INDIVIDUAL SCORES DERIVED FROM TALLIES

Judge E

Softness of Positive Plate

		7	8	19	20	26	9	10	17	18	25	Totals
	7	*	0	-1	-1	0	1	0	0	-1	1	-1
	8	0	*	-1	-1	0	-1	-1	0	0	0	-4
T	19	1	1	*	1	1	1	0	1	-1	-1	4
	20	1	1	-1	*	0	0	-1	0	-1	1	0
	26	0	0	-1	0	*	0	0	-1	1	-1	-2
	9	-1	1	-1	0	0	*	-1	-1	1	-1	-3
	10	0	1	0	1	0	1	*	1	0	1	5
U	17	0	0	-1	0	1	1	-1	*	-1	0	-1
	18	1	0	1	1	-1	-1	0	1	*	1	3
	25	-1	0	1	-1	1	1	-1	0	-1	*	-1

Softness of Negative Plate

		7	8	19	20	26	9	10	17	18	25	Totals
	7	*	0	1	0	1	1	1	0	1	1	6
	8	0	*	0	1	1	1	1	-1	-1	1	3
T	19	-1	0	*	1	-1	0	0	-1	-1	0	-3
	20	0	-1	-1	*	1	0	0	0	-1	1	-1
	26	-1	-1	1	-1	*	-1	-1	-1	-1	0	-6
	9	-1	-1	0	0	1	*	0	0	0	-1	-2
	10	-1	-1	0	0	1	0	*	0	-1	-1	-3
U	17	0	1	1	0	1	0	0	*	-1	0	2
	18	-1	1	1	1	1	0	1	1	*	1	6
	25	-1	-1	0	-1	0	1	1	0	-1	*	-2

Adherence

		7	8	19	20	26	9	10	17	18	25	Totals
	7	*	0	0	0	0	0	0	0	0	0	0
	8	0	*	1	0	0	0	0	0	0	0	1
T	19	0	-1	*	1	0	0	0	-1	-1	0	-2
	20	0	0	-1	*	1	0	-1	0	0	1	0
	26	0	0	0	-1	*	0	0	0	0	0	-1
	9	0	0	0	0	0	*	0	0	1	1	2
	10	0	0	0	1	0	0	*	0	0	0	1
U	17	0	0	1	0	0	0	0	*	-1	0	0
	18	0	0	1	0	0	-1	0	1	*	0	1
	25	0	0	0	-1	0	-1	0	0	0	*	-2

APPENDIX 2 (sheet 2)

TABLE 6e INDIVIDUAL SCORES DERIVED FROM TALLIES

Judge E (Cont'd)

Peroxidation

		7	8	19	20	26	9	10	17	18	25	Total
	7	*	-1	-1	-1	0	0	-1	-1	-1	0	-6
	8	1	*	1	0	0	-1	0	-1	0	-1	-1
T	19	1	-1	*	1	0	1	-1	0	1	0	2
	20	1	0	-1	*	0	1	1	0	0	1	3
	26	0	0	0	0	*	0	-1	1	0	0	0
	9	0	1	-1	-1	0	*	0	0	0	-1	-2
	10	1	0	1	-1	1	0	*	0	1	1	4
U	17	1	1	0	0	-1	0	0	*	1	-1	1
	18	1	0	-1	0	0	0	-1	-1	*	0	-2
	25	0	1	0	-1	0	1	-1	1	0	*	1

General Condition

		7	8	19	20	26	9	10	17	18	25	Total
	7	*	-1	-1	-1	0	0	0	-1	0	0	-4
	8	1	*	1	0	0	-1	0	-1	0	0	0
T	19	1	-1	*	0	0	1	0	0	-1	0	0
	20	1	0	0	*	1	1	0	0	-1	1	3
	26	0	0	0	-1	*	-1	0	-1	0	0	-3
	9	0	1	-1	-1	0	*	0	0	1	-1	-1
	10	0	0	0	0	1	0	*	0	1	1	3
U	17	1	1	0	0	1	0	0	*	0	0	3
	18	0	0	1	1	0	-1	-1	0	*	0	0
	25	0	0	0	-1	0	1	-1	0	0	*	-1

T = TREATED
U = UNTREATED

APPENDIX 2

TABLE 6f INDIVIDUAL SCORES DERIVED FROM TALLIES

Judge F

Softness of Positive Plate

		7	8	19	20	26	9	10	17	18	25	Total
	7	*	0	0	0	0	0	0	0	0	0	0
	8	0	*	0	0	0	0	0	0	0	0	0
T	19	0	0	*	0	0	0	0	0	0	0	0
	20	0	0	0	*	0	0	0	0	0	0	0
	26	0	0	0	0	*	0	0	0	0	0	0
	9	0	0	0	0	0	*	0	0	0	0	0
	10	0	0	0	0	0	0	*	0	0	0	0
U	17	0	0	0	0	0	0	0	*	0	0	0
	18	0	0	0	0	0	0	0	0	*	0	0
	25	0	0	0	0	0	0	0	0	0	*	0

Softness of Negative Plate

		7	8	19	20	26	9	10	17	18	25	Total
	7	*	0	1	0	0	0	0	0	0	0	1
	8	0	*	0	0	0	0	0	0	0	0	0
T	19	-1	0	*	0	0	0	0	0	-1	0	-2
	20	0	0	0	*	0	0	0	0	0	0	0
	26	0	0	0	0	*	0	0	0	0	0	0
	9	0	0	0	0	0	*	0	0	0	0	0
	10	0	0	0	0	0	0	*	0	0	0	0
U	17	0	0	0	0	0	0	0	*	0	0	0
	18	0	0	1	0	0	0	0	0	*	0	1
	25	0	0	0	0	0	0	0	0	0	*	0

Adherence

		7	8	19	20	26	9	10	17	18	25	Total
	7	*	0	0	0	0	0	0	0	0	0	0
	8	0	*	0	0	0	0	-1	0	0	0	-1
T	19	0	0	*	0	0	0	0	0	-1	0	-1
	20	0	0	0	*	0	0	0	0	0	0	0
	26	0	0	0	0	*	0	0	0	0	0	0
	9	0	0	0	0	0	*	0	0	0	1	1
	10	0	1	0	0	0	0	*	0	0	0	1
U	17	0	0	0	0	0	0	0	*	0	0	0
	18	0	0	1	0	0	0	0	0	*	0	1
	25	0	0	0	0	0	-1	0	0	0	*	-1

TABLE 6f INDIVIDUAL SCORES DERIVED FROM TABLES

Judge F (Cont'd)

Peroxidation

		7	8	19	20	26	9	10	17	18	25	Total
	7	*	0	0	0	0	0	0	0	0	0	0
	8	0	*	0	0	0	0	0	0	0	0	0
T	19	0	0	*	0	0	0	0	0	0	0	0
	20	0	0	0	*	0	0	0	0	0	0	0
	26	0	0	0	0	*	0	0	0	0	0	0
	9	0	0	0	0	0	*	0	0	0	0	0
	10	0	0	0	0	0	0	*	0	0	0	0
U	17	0	0	0	0	0	0	0	*	0	0	0
	18	0	0	0	0	0	0	0	0	*	0	0
	25	0	0	0	0	0	0	0	0	0	*	0

General Condition

		7	8	19	20	26	9	10	17	18	25	Total
	7	*	-1	-1	-1	-1	0	-1	-1	-1	0	-7
	8	1	*	1	0	0	-1	0	0	0	1	2
T	19	1	-1	*	1	0	0	0	0	1	0	2
	20	1	0	-1	*	0	1	0	0	0	-1	0
	26	1	0	0	0	*	0	-1	1	0	1	2
	9	0	1	0	-1	0	*	0	0	-1	-1	-2
	10	1	0	0	0	1	0	*	0	0	1	3
U	17	1	0	0	0	-1	0	0	*	1	-1	0
	18	1	0	-1	0	0	1	0	-1	*	0	0
	25	0	-1	0	1	-1	1	-1	1	0	*	0

T = TREATED
U = UNTREATED

TABLE 6g INDIVIDUAL SCORES DERIVED FROM TALLIES

Judge G

Softness of Positive Plate

		7	8	19	20	26	9	10	17	18	25	Total
	7	*	0	0	0	0	0	0	0	0	0	0
	8	0	*	0	0	0	0	0	0	0	0	0
T	19	0	0	*	0	0	0	0	0	0	1	1
	20	0	0	0	*	0	0	0	0	0	0	0
	26	0	0	0	0	*	0	0	0	0	0	0
	9	0	0	0	0	0	*	0	0	0	0	0
	10	0	0	0	0	0	0	*	1	0	0	1
U	17	0	0	0	0	0	0	-1	*	0	0	-1
	18	0	0	0	0	0	0	0	0	*	0	0
	25	0	0	-1	0	0	0	0	0	0	*	-1

Softness of Negative Plate

		7	8	19	20	26	9	10	17	18	25	Total
	7	*	0	0	0	1	0	0	-1	0	0	0
	8	0	*	0	0	0	1	0	0	0	0	1
T	19	0	0	*	0	0	0	0	-1	0	0	-1
	20	0	0	0	*	0	0	0	0	-1	0	-1
	26	-1	0	0	0	*	0	-1	0	0	0	-2
	9	0	-1	0	0	0	*	0	-1	0	0	-2
	10	0	0	0	0	1	0	*	0	0	0	1
U	17	1	0	1	0	0	1	0	*	0	0	3
	18	0	0	0	1	0	0	0	0	*	1	2
	25	0	0	0	0	0	0	0	0	-1	*	-1

Adherence

		7	8	19	20	26	9	10	17	18	25	Total
	7	*	0	0	0	0	0	0	0	0	0	0
	8	0	*	0	0	0	0	0	0	0	0	0
T	19	0	0	*	0	0	0	0	0	0	0	0
	20	0	0	0	*	0	0	0	0	0	0	0
	26	0	0	0	0	*	0	0	0	0	0	0
	9	0	0	0	0	0	*	0	0	0	0	0
	10	0	0	0	0	0	0	*	0	0	1	1
U	17	0	0	0	0	0	0	0	*	0	0	0
	18	0	0	0	0	0	0	0	0	*	0	0
	25	0	0	0	0	0	0	-1	0	0	*	-1

TABLE 6g INDIVIDUAL SCORES DERIVED FROM TALLIES

Judge G (Cont'd)

Peroxidation

		7	8	19	20	26	9	10	17	18	25	Total
	7	*	0	-1	0	-1	0	0	-1	-1	0	-4
	8	0	*	0	0	0	0	0	-1	0	0	-1
T	19	1	0	*	1	0	0	0	0	1	0	3
	20	0	0	-1	*	0	0	0	-1	0	0	-2
	26	1	0	0	0	*	0	0	0	0	0	1
	9	0	0	0	0	0	*	0	0	0	-1	-1
	10	0	0	0	0	0	0	*	0	1	1	2
U	17	1	1	0	1	0	0	0	*	1	0	4
	18	1	0	-1	0	0	0	-1	-1	*	0	-2
	25	0	0	0	0	0	1	-1	0	0	*	0

General Condition

		7	8	19	20	26	9	10	17	18	25	Total
	7	*	0	0	0	0	0	0	0	0	0	0
	8	0	*	0	0	0	0	0	0	0	0	0
T	19	0	0	*	0	0	0	0	0	0	0	0
	20	0	0	0	*	0	0	0	0	0	0	0
	26	0	0	0	0	*	0	0	0	0	0	0
	9	0	0	0	0	0	*	0	0	0	0	0
	10	0	0	0	0	0	0	*	0	0	0	0
U	17	0	0	0	0	0	0	0	*	0	0	0
	18	0	0	0	0	0	0	0	0	*	0	0
	25	0	0	0	0	0	0	0	0	0	*	0

T = TREATED
U = UNTREATED

APPENDIX 2

TABLE 6h INDIVIDUAL SCORES DERIVED FROM TALLIES

Judge H

Softness of Positive Plate

		7	8	19	20	26	9	10	17	18	25	Total
	7	*	0	0	0	0	0	0	0	0	0	0
	8	0	*	0	0	0	0	-1	0	0	0	-1
T	19	0	0	*	1	0	0	0	0	0	0	1
	20	0	0	-1	*	1	0	0	0	1	0	1
	26	0	0	0	-1	*	0	0	0	0	0	-1
	9	0	0	0	0	0	*	0	0	0	0	0
	10	0	1	0	0	0	0	*	0	0	1	2
U	17	0	0	0	0	0	0	0	*	0	0	0
	18	0	0	0	-1	0	0	0	0	*	0	-1
	25	0	0	0	0	0	0	-1	0	0	*	-1

Softness of Negative Plate

		7	8	19	20	26	9	10	17	18	25	Total
	7	*	0	0	0	0	0	0	0	0	1	1
	8	0	*	0	0	1	0	0	0	0	0	1
T	19	0	0	*	0	0	-1	1	0	0	0	0
	20	0	0	0	*	1	1	0	-1	0	0	1
	26	0	-1	0	-1	*	0	0	0	-1	0	-3
	9	0	0	1	-1	0	*	0	-1	1	0	0
	10	0	0	-1	0	0	0	*	0	0	1	0
U	17	0	0	0	1	0	1	0	*	0	0	2
	18	0	0	0	0	1	-1	0	0	*	0	0
	25	-1	0	0	0	0	0	-1	0	0	*	-2

Adherence

		7	8	19	20	26	9	10	17	18	25	Total
	7	0	0	0	0	0	0	0	0	0	0	0
	8	0	*	0	0	0	0	0	0	0	0	0
T	19	0	0	*	-1	0	0	0	0	0	0	-1
	20	0	0	1	*	0	-1	0	0	0	0	0
	26	0	0	0	0	*	0	0	0	0	0	0
	9	0	0	0	1	0	*	0	0	0	0	1
	10	0	0	0	0	0	0	*	0	0	0	0
U	17	0	0	0	0	0	0	0	*	0	1	1
	18	0	0	0	0	0	0	0	0	*	0	0
	25	0	0	0	0	0	0	0	-1	0	*	-1

APPENDIX 2 (sheet 2)

TABLE 6h INDIVIDUAL SCORES DERIVED FROM TALLIES

Judge H (Cont'd)

Peroxidation

		7	8	19	20	26	9	10	17	18	25	Total
	7	*	0	0	0	0	0	0	0	0	0	0
	8	0	*	0	0	0	0	0	0	0	0	0
T	19	0	0	*	0	0	0	0	0	0	0	0
	20	0	0	0	*	0	-1	0	0	0	0	-1
	26	0	0	0	0	*	0	0	0	0	0	0
	9	0	0	0	1	0	*	0	0	0	0	1
	10	0	0	0	0	0	0	*	0	0	0	0
U	17	0	0	0	0	0	0	0	*	0	0	0
	18	0	0	0	0	0	0	0	0	*	0	0
	25	0	0	0	0	0	0	0	0	0	*	0

General Condition

		7	8	19	20	26	9	10	17	18	25	Total
	7	*	-1	0	0	-1	-1	0	-1	0	1	-3
	8	1	*	0	0	0	0	0	0	0	0	1
T	19	0	0	*	0	0	-1	0	0	0	0	-1
	20	0	0	0	*	1	0	0	-1	-1	0	-1
	26	1	0	0	-1	*	0	0	0	0	0	0
	9	1	0	1	0	0	*	0	0	0	-1	1
	10	0	0	0	0	0	0	*	0	0	1	1
U	17	1	0	0	1	0	0	0	*	1	1	4
	18	0	0	0	1	0	0	0	-1	*	0	0
	25	-1	0	0	0	0	1	-1	-1	0	*	-2

T = TREATED
U = UNTREATED

APPENDIX 2

TABLE 6i INDIVIDUAL SCORES DERIVED FROM TALLIES

Judge I

Softness of Positive Plate

		7	8	19	20	26	9	10	17	18	25	Total
	7	*	0	0	0	-1	0	0	1	0	0	0
	8	0	*	0	0	0	0	-1	1	0	0	0
T	19	0	0	*	-1	1	0	1	0	0	0	1
	20	0	0	1	*	0	1	1	0	1	0	4
	26	1	0	-1	0	*	1	0	0	0	0	1
	9	0	0	0	-1	-1	*	0	0	1	0	-1
	10	0	1	-1	-1	0	0	*	0	0	0	-1
U	17	-1	-1	0	0	0	0	0	*	0	0	-2
	18	0	0	0	-1	0	-1	0	0	*	1	-1
	25	0	0	0	0	0	0	0	0	-1	*	-1

Softness of Negative Plate

		7	8	19	20	26	9	10	17	18	25	Total
	7	*	1	1	0	0	0	0	1	0	1	4
	8	-1	*	1	0	0	0	1	0	0	0	1
T	19	-1	-1	*	-1	-1	-1	1	-1	-1	1	-5
	20	0	0	1	*	0	1	1	0	-1	1	3
	26	0	0	1	0	*	0	0	-1	0	-1	-1
	9	0	0	1	-1	0	*	-1	0	-1	1	-1
	10	0	-1	-1	-1	0	1	*	0	0	0	-2
T	17	-1	0	1	0	1	0	0	*	-1	-1	-1
	18	0	0	1	1	0	1	0	1	*	1	5
	25	-1	0	-1	-1	1	-1	0	1	-1	*	-3

Adherence

		7	8	19	20	26	9	10	17	18	25	Total
	7	*	0	0	0	0	0	0	0	0	0	0
	8	0	*	0	0	0	0	0	0	0	0	0
T	19	0	0	*	0	0	0	0	0	0	0	0
	20	0	0	0	*	0	0	0	0	0	0	0
	26	0	0	0	0	*	0	0	0	0	0	0
	9	0	0	0	0	0	*	0	0	0	0	0
	10	0	0	0	0	0	0	*	0	0	0	0
U	17	0	0	0	0	0	0	0	*	0	0	0
	18	0	0	0	0	0	0	0	0	*	0	0
	25	0	0	0	0	0	0	0	0	0	*	0

APPENDIX 2 (sheet 2)

TABLE 6i INDIVIDUAL SCORES DERIVED FROM TALLIES

Judge I (Cont'd)

Peroxidation

		7	8	19	20	26	9	10	17	18	25	Total
T	7	*	0	0	0	0	0	0	0	0	0	0
	8	0	*	0	0	0	0	0	0	0	0	0
	19	0	0	*	0	0	0	0	0	0	0	0
	20	0	0	0	*	0	0	0	0	0	0	0
	26	0	0	0	0	*	0	0	0	0	0	0
U	9	0	0	0	0	0	*	0	0	0	0	0
	10	0	0	0	0	0	0	*	0	0	0	0
	17	0	0	0	0	0	0	0	*	0	0	0
	18	0	0	0	0	0	0	0	0	*	0	0
	25	0	0	0	0	0	0	0	0	0	*	0

General Condition - NO TALLIES GIVEN FOR THIS CHARACTERISTIC.

TABLE 7 : Scores and Ranks for Each Battery on Each Characteristic as Determined by Each Judge.

	Batteries	Softness of Pos. Plate Score	Softness of Pos. Plate Rank	Softness of Neg. Plate Score	Softness of Neg. Plate Rank	Adherence Score	Adherence Rank	Peroxidation Score	Peroxidation Rank	General Condition Score	General Condition Rank	Sum of Scores	Sum of Ranks	Judge's Ranking Based on Scores	Judge's Ranking Based on Ranks
							JUDGE A								
	7	7	10	7	10	6	10	7	10	7	10	34	50	10	10
	8	3	8.5	3	8.5	3	8.5	1	6.5	4	9	14	41	8	8
T	19	-2	3.5	-2	3.5	-2	3.5	-2	4	-2	3.5	-10	18	4	4
	20	-5	1.5	-5	1.5	-4	2	-5	1	-5	1.5	-24	7.5	1	1
	26	-1	5	-1	5	0	5.5	-1	5	-1	5	-4	25.5	5	5
	Sum	2	28.5	2	28.5	3	29.5	0	26.5	3	29.0	10	142	28	28
	9	-5	1.5	-5	1.5	-5	1	-3	3	-5	1.5	-23	8.5	2	2
	10	1	6.5	1	6.5	1	7	3	8.5	1	7	7	35.5	7	7
U	17	1	6.5	1	6.5	0	5.5	1	6.5	0	6	3	31	6	6
	18	3	8.5	3	8.5	3	8.5	3	8.5	3	8	15	42	9	9
	25	-2	3.5	-2	3.5	-2	3.5	-4	2	-2	3.5	-12	16	3	3
	Sum	-2	26.5	-2	26.5	-3	25.5	0	28.5	-3	26.0	-10	133	27	27
							JUDGE B								
	7	9	10	9	10	9	10	9	10	9	10	45	50	10	10
	8	1	6.5	1	6.5	1	6.5	1	6.5	1	6.5	5	32.5	6.5	6.5
T	19	1	6.5	1	6.5	1	6.5	1	6.5	1	6.5	5	32.5	6.5	6.5
	20	-5	1.5	-5	1.5	-5	1.5	-5	1.5	-5	1.5	-25	7.5	1.5	1.5
	26	-3	3.5	-3	3.5	-3	3.5	-3	3.5	-3	3.5	-15	17.5	3.5	3.5
	Sum	3	28	3	28	3	28	3	28	3	28	15	140	28	28
	9	-5	1.5	-5	1.5	-5	1.5	-5	1.5	-5	1.5	-25	7.5	1.5	1.5
	10	1	6.5	1	6.5	1	6.5	1	6.5	1	6.5	5	32.5	6.5	6.5
U	17	1	6.5	1	6.5	1	6.5	1	6.5	1	6.5	5	32.5	6.5	6.5
	18	3	9	3	9	3	9	3	9	3	9	15	45	9	9
	25	-3	3.5	-3	3.5	-3	3.5	-3	3.5	-3	3.5	-15	17.5	3.5	3.5

TABLE 7 : Scores and Ranks for Each Battery on Each Characteristic as Determined by Each Judge (Cont'd sheet 2)

	Batteries	Softness of Pos. Plate		Softness of Neg. Plate		Adherence		Peroxidation		General Condition		Sum of		Judge's Ranking Based on	
		Score	Rank	Score	Rank	Score	Rank	Score	Rank	Score	Rank	Scores	Ranks	Scores	Ranks
								JUDGE C							
	7	2	8	3	9	2	10	2	10	1	2.5	10	46.5	10	10
	8	-2	2.5	4	10	-1	3	-1	1.5	0	5.5	0	22.5	6	4
T	19	-1	4.5	-3	2	-1	3	-1	1.5	1	9.5	-5	20.5	2	1.5
	20	-4	1	-3	2	1	7.5	0	6	0	5.5	-6	22	1	3
	26	-2	2.5	0	5.5	1	7.5	0	6	0	5.5	-1	27	4	6
	Sum	-7	18.5	1	28.5	2	31	0	25	2	35.5	-2	138.5	23	24.5
	9	3	10	0	5.5	0	5	0	6	0	5.5	3	32	9	9
	10	2	8	-3	2	1	7.5	0	6	0	5.5	0	29	6	7
U	17	-1	4.5	0	5.5	-1	3	0	6	-1	1.5	-3	20.5	3	1.5
	18	2	8	2	8	-3	1	0	6	-1	1.5	0	24.5	6	5
	25	1	6	0	5.5	1	7.5	0	6	0	5.5	2	30.5	8	8
	Sum	7	36.5	-1	26.5	-2	24	0	30	-2	19.5	2	136.5	32	30.5
								JUDGE D							
	7	-3	1	1	8	0	5.5	-2	1.5	-4	1	-8	17	1	1
	8	0	5	1	8	-1	1	-1	3	0	4.5	-1	21.5	3	2
T	19	1	8	1	8	0	5.5	0	5	-3	2	-1	28.5	3	6
	20	1	8	0	4.5	0	5.5	-2	1.5	3	10	2	29.5	8.5	7
	26	-1	2.5	0	4.5	0	5.5	1	8	1	7	1	27.5	6	4.5
	Sum	-2	24.5	3	33	-1	23	-4	19	-3	24.5	-7	124	21.5	20.5
	9	0	5	0	4.5	0	5.5	1	8	0	4.5	1	27.5	6	4.5
	10	2	10	-3	1	1	10	0	5	2	9	2	35	8.5	9.5
U	17	-1	2.5	2	10	0	5.5	2	10	1	7	4	35	10	9.5
	18	0	5	0	4.5	0	5.5	0	5	-1	3	-1	23	3	3
	25	1	8	-2	2	0	5.5	1	8	1	7	1	30.5	6	8
	Sum	2	30.5	-3	22	1	32	4	36	3	30.5	7	151	33.5	34.5

= 7.320 =

TABLE 7 : Scores and Ranks for Each Battery on Each Characteristic as Determined by Each Judge (Cont'd Sheet 3)

	Batteries	Softness of Pos. Plate		Softness of Neg. Plate		Adherence		Peroxidation		General Condition		Sum of		Judge's Rankings Based on	
		Score	Rank	Score	Rank	Score	Rank	Score	Rank	Score	Rank	Scores	Ranks	Scores	Ranks
								JUDGE E							
	7	-1	5	6	9.5	0	5	-6	1	-4	1	-5	21.5	3.5	3
	8	-4	1	3	8	1	8	-1	4	0	6	-1	27	5	5.5
T	19	4	9	-3	2.5	-2	1.5	2	8	0	6	1	27	6	5.5
	20	0	7	-1	6	0	5	3	9	3	9	5	36	7.5	9
	26	-2	3	-6	1	-1	3	0	5	-3	2	-12	14	1	1
	Sum	-3	25	-1	27	-2	22.5	-2	27	-4	24	-12	125.5	23	24
	9	-3	2	-2	4.5	2	10	-2	2.5	-1	3.5	-6	22.5	2	4
	10	5	10	-3	2.5	1	8	4	10	3	9	10	39.5	10	10
U	17	-1	5	2	7	0	5	1	6.5	3	9	5	32.5	7.5	7
	18	3	8	6	9.5	1	8	-2	2.5	0	6	8	34	9	8
	25	-1	5	-2	4.5	-2	1.5	1	6.5	-1	3.5	-5	21	3.5	2
	Sum	3	30	1	28	2	32.5	2	28	4	31	12	149.5	32	31
								JUDGE F							
	7	0	5.5	1	9.5	0	5.5	0	5.5	-7	1	-6	27	1	6.5
	8	0	5.5	0	5	-1	2	0	5.5	2	8	1	26	7	4
T	19	0	5.5	-2	1	-1	2	0	5.5	2	8	-1	22	3	1
	20	0	5.5	0	5	0	5.5	0	5.5	0	4.5	0	26	5.5	4
	26	0	5.5	0	5	0	5.5	0	5.5	2	8	2	29.5	8.5	8
	Sum	0	27.5	-1	25.5	-2	20.5	0	27.5	-1	29.5	-4	130.5	25	23.5
	9	0	5.5	0	5	1	9	0	5.5	-2	2	-1	27	3	6.5
	10	0	5.5	0	5	1	9	0	5.5	3	10	4	35	10	10
U	17	0	5.5	0	5	0	5.5	0	5.5	0	4.5	0	26	5.5	4
	18	0	5.5	1	9.5	1	9	0	5.5	0	4.5	2	34	8.5	9
	25	0	5.5	0	5	-1	2	0	5.5	0	4.5	-1	22.5	3	2
	Sum	0	27.5	1	29.5	2	34.5	0	27.5	1	25.5	4	144.5	30	31.5

TABLE 7: Scores and Ranks for Each Battery on Each Characteristic as Determined by Each Judge (Cont'd Sheet 4)

	Batteries	Softness of Pos. Plate Score	Softness of Pos. Plate Rank	Softness of Neg. Plate Score	Softness of Neg. Plate Rank	Adherence Score	Adherence Rank	Peroxidation Score	Peroxidation Rank	General Condition Score	General Condition Rank	Sum of Scores	Sum of Ranks	Judge's Rankings Based on Scores	Judge's Rankings Based on Ranks
								JUDGE G							
	7	0	5.5	0	6	0	5.5	-4	1	0	5.5	-4	23.5	1	4
	8	0	5.5	1	7.5	0	5.5	-1	4.5	0	5.5	0	28.5	6.5	7
T	19	1	9.5	-1	4	0	5.5	3	9	0	5.5	3	33.5	8	9
	20	0	5.5	-1	4	0	5.5	-2	2.5	0	5.5	-3	23	3	3
	26	0	5.5	-2	1.5	0	5.5	1	7	0	5.5	-1	25	5	5
	Sum	1	31.5	-3	23	0	27.5	-3	24	0	27.5	-5	133.5	23.5	28
	9	0	5.5	-2	1.5	0	5.5	-1	4.5	0	5.5	-3	22.5	3	2
	10	1	9.5	1	7.5	1	10	2	8	0	5.5	5	40.5	9	10
U	17	-1	1.5	3	10	0	5.5	4	10	0	5.5	6	32.5	10	8
	18	0	5.5	2	9	0	5.5	-2	2.5	0	5.5	0	28	6.5	6
	25	-1	1.5	-1	4	-1	1	0	6	0	5.5	-3	18	3	1
	Sum	-1	23.5	3	32	0	27.5	3	31	0	27.5	5	141.5	31.5	27
								JUDGE H							
	7	0	6	1	8	0	5.5	0	5.5	-3	1	-2	26	3	5
	8	-1	2.5	1	8	0	5.5	0	5.5	1	8	1	29.5	7	7
T	19	1	8.5	0	4.5	-1	1.5	0	5.5	-1	3.5	-1	23.5	4.5	3.5
	20	1	8.5	1	8	0	5.5	-1	1	-1	3.5	0	26.5	6	6
	26	-1	2.5	-3	1	0	5.5	0	5.5	0	5.5	-4	20	2	2
	Sum	0	28	0	29.5	-1	23.5	-1	23	-4	21.5	-6	125.5	22.5	23.5
	9	0	6	0	4.5	1	9.5	1	10	1	8	3	38	8.5	9
	10	2	10	0	4.5	0	5.5	0	5.5	1	8	3	33.5	8.5	8
U	17	0	6	2	10	1	9.5	0	5.5	4	10	7	41	10	10
	18	-1	2.5	0	4.5	0	5.5	0	5.5	0	5.5	-1	23.5	4.5	3.5
	25	-1	2.5	-2	2	-1	1.5	0	5.5	-2	2	-6	13.5	1	1
	Sum	0	27	0	25.5	1	31.5	1	32	4	33.5	6	149.5	32.5	31.5

- 7,322 -

TABLE 7 : Scores and Ranks for Each Battery on Each Characteristic as Determined by Each Judge (Cont'd Sheet 5)

	Batteries	Softness of Pos. Plate		Softness of Neg. Plate		Adherence		Perox-idation		General Condition		Sum of		Judge's Rankings Based on	
		Score	Rank	Score	Rank	Score	Rank	Score	Rank	Score	Rank	Scores	Ranks	Scores	Ranks
								JUDGE I							
	7	0	6.5	4	9	0	5.5	0	5.5			4	26.5	8.5	9
	8	0	6.5	1	7	0	5.5	0	5.5			1	24.5	7	7
T	19	1	8.5	-5	1	0	5.5	0	5.5	NO TALLIES		-4	20.5	1.5	5
	20	4	10	3	8	0	5.5	0	5.5	GIVEN FOR		7	29	10	10
	26	1	8.5	-1	5	0	5.5	0	5.5	THIS CHARAC-		0	24.5	6	7
	Sum	6	40	2	30	0	27.5	0	27.5	TERISTIC.		8	125	33	38
	9	-1	3.5	-1	5	0	5.5	0	5.5			-2	19.5	5	4
	10	-1	3.5	-2	3	0	5.5	0	5.5			-3	17.5	3.5	3
U	17	-2	1	-1	5	0	5.5	0	5.5			-3	17	3.5	2
	18	-1	3.5	5	10	0	5.5	0	5.5			4	24.5	8.5	7
	25	-1	3.5	-3	2	0	5.5	0	5.5			-4	16.5	1.5	1
	Sum	-6	15	-2	25	0	27.5	0	27.5			-8	95	22	17

$\Sigma = 7.323$

T = TREATED
U = UNTREATED

APPENDIX 2

TABLE 8: Sums of Scores and Sums of Ranks for Each Battery on Each Characteristic

	Batteries	Softness of Pos. Plate		Softness of Neg. Plate		Adherence		Peroxidation		General Condition		Overall Sum Of		Overall Ranking Based on	
		Score	Rank	Score	Rank	Score	Rank	Score	Rank	Score	Rank	Scores	Ranks	Scores	Ranks
T	7	14	57.5	32	79	17	62.5	6	50	-1	39	68	288	10	9
T	8	-3	43.5	15	68.5	2	45.5	-2	42.5	8	53	20	253	6	6
T	19	6	63.5	-14	33	-6	34.5	3	50.5	-2	44.5	-13	226	5	5
T	20	-8	48.5	-11	40.5	-8	43.5	-12	33.5	-5	41	-44	207	2	3
T	26	-9	38.5	-16	32	-3	47.0	-2	51	-4	42	-34	210.5	4	4
T	Sum	0	251.5	6	253.0	2	233.0	-7	227.5	-4	219.5	-3	1184.5	27	27
U	9	-11	40.5	-15	33.5	-6	52.5	-9	46.5	-12	32	-53	205	1	2
U	10	13	69.5	-8	38.5	7	69	10	60.5	11	60.5	33	298	8	10
U	17	-4	39.0	10	65.5	1	51.5	9	62	8	50	24	268	7	7
U	18	9	55.5	22	72.5	5	57.5	2	50	4	43	42	278.5	9	8
U	25	-7	39.0	-15	32	-9	31.5	-5	48.5	-7	35	-43	186	3	1
U	Sum	0	243.5	- 6	242.0	-2	262.0	7	267.5	4	220.5	3	1235.5	28	28

$= 7.324$

CORRESPONDING RANKINGS ON INDIVIDUAL CHARACTERISTICS

T	7	10	8	10	10	10	9	8	5.5	6	3
T	8	6	5	8	8	7	4	4.5	2	8.5	9
T	19	7	9	4	3	3.5	2	7	7	5	7
T	20	3	6	5	6	2	3	1	1	3	4
T	26	2	1	1	1.5	5	5	4.5	8	4	5
T	Sum	28	29	28	28.5	27.5	23	25	23.5	26.5	28
U	9	1	4	2.5	4	3.5	7	2	3	1	1
U	10	9	10	6	5	9	10	10	9	10.	10
U	17	5	2.5	7	7	6	6	9	10	8.5	8
U	18	8	7	9	9	8	8	6	5.5	7	6
U	25	4	2.5	2.5	1.5	1	1	3	4	2	2
U	Sum	27	26	27	26.5	27.5	32	30	31.5	28.5	27

T = TREATED
U = UNTREATED

TABLE 9 : Analysis of Direct Comparisons Between Treated and Untreated Batteries

Judge	Preference Expressed for Treated (T)	Untreated (U)	Total (N)	Probability*
		Softness of Positive Plate		
A	12	10	22	.416
B	14	11	25	.345
C	3	10	13	.989
D	3	5	8	.855
E	6	9	15	.849
F	0	0	0	1.000
G	1	0	1	.500
H	1	1	2	.750
I	7	1	8	.035
Total	47	47	94	.50
	Dispersion index: D^2 = 10.91 7 d.f. P = 0.15			
		Softness of Negative Plate		
A	12	10	22	.416
B	14	11	25	.345
C	6	5	11	.500
D	9	6	15	.304
E	8	9	17	.685
F	0	1	1	1.000
G	1	4	5	.969
H	3	3	6	.656
I	8	6	14	.395
Total	61	55	116	.29
	Dispersion index: D^2 = 4.078 8 d.f. P = 0.85			
		Adherence		
A	12	9	21	.332
B	14	11	25	.345
C	5	3	8	.363
D	0	1	1	1.000
E	1	3	4	.938
F	0	2	2	1.000
G	0	0	0	1.000
H	0	1	1	1.000
I	0	0	0	1.000
Total	32	30	62	.40
	Dispersion index: D^2 = 6.23 6 d.f. P = 0.4			

* Probability of an equal or greater total (T) for treated.

TABLE 9 : Analysis of Direct Comparisons Between Treated and Untreated Batteries (Cont'd)

Judge	Preference Expressed for Treated (T)	Untreated (U)	Total (N)	Probability*
		Peroxidation		
A	11	11	22	.584
B	14	11	25	.345
C	0	0	0	1.000
D	0	4	4	1.000
E	6	8	14	.788
F	0	0	0	1.000
G	1	4	5	.969
H	0	1	1	1.000
I	0	0	0	1.000
Total	32	39	71	.80
	Dispersion index: $D^2 = 9.67$ 5 d.f. P = 0.08			
		General Condition		
A	13	10	23	.339
B	14	11	25	.345
C	2	0	2	.250
D	3	6	9	.910
E	3	7	10	.945
F	5	6	11	.726
G	0	0	0	1.000
H	1	5	6	.984
I	No Tallies Given for This Characteristic			
Total	41	45	86	.67
	Dispersion index: $D^2 = 7.94$ 6 d.f. P = 0.25			

* Probability of an equal or greater total (T) for treated.

APPENDIX 3: Laboratory Data Pertaining To Tests of Discarded Automotive Batteries

a. Batteries, Group 1, 3, 4, 5, 6, 7

b. Batteries, Group 10, 12, 13, 17, 18, 19

c. Batteries, Group 31, 32, 33, 34, 35, 36

d. Tables for Cells of All Batteries

APPENDIX 3a

VOLTAGES ON PRE-TEST CHARGE
(DISCARDED BATTERIES)

Battery		1			3			4		
Cell		1	2	3	1	2	3	1	2	3
Time	Rate									
3/26/52										
8:15 PM	0	2.06	2.06	2.04	2.02	2.04	2.03	2.06	2.06	2.06
8:20 PM	5	On Charge - All Cells								
8:25 PM	"	2.12	2.11	2.11	2.13	2.15	2.14	2.12	2.11	2.12
8:50 PM	"	Adjusted Water in All Cells								
9:45 PM	"	2.18	2.18	2.18	2.32	2.34	2.31	2.16	2.16	2.17
12:00 M	"	2.28	2.34	2.31	2.33	2.35	2.32	2.27	2.26	2.28
3/27/52										
9:00 AM	"	2.31	2.35	2.32	2.35	2.36	2.31	2.30	2.29	2.31
10:25 AM	"	2.31	2.35	2.32	2.35	2.36	2.33	2.30	2.29	2.31
10:30 AM		Off Charge - All Cells								

SPECIFIC GRAVITY DURING PRE-TEST CHARGE

3/26/52									
9:45 PM	1.170	1.170	1.190	1.190	1.195	1.180	1.215	1.220	1.210
12:00 M	1.200	1.215	1.205	1.190	1.200	1.195	1.235	1.220	1.235
3/27/52									
9:00 AM	1.215	1.210	1.205	1.190	1.200	1.190	1.225	1.225	1.235
10:15 AM	1.215	1.215	1.215	1.200	1.205	1.200	1.235	1.235	1.240

PRE-TEST DISCHARGE AT 300 AMPERES: VOLTAGES

3/27/52									
3:00 PM OCV	2.09	2.06	2.07	2.04	2.07	2.02	2.10	2.08	2.10
5 sec.	1.72	1.70	1.68	0.80	0.65	0.66	1.66	1.70	1.71
30 sec.	1.71	1.70	1.68	0.62	0.54	0.55	1.63	1.70	1.72
1 Min.	1.69	1.69	1.66	* Off	Off	Off	1.61	1.68	1.70
1½ Min.	1.68	1.67	1.64				1.58	1.66	1.68
	- - - - - - - - - - - RECOVERY VOLTAGES - - - - - - - - - -								
2 Min.	2.01	2.01	2.00	2.00	2.01	2.00	2.01	2.02	2.01
2½ Min.	2.02	2.02	2.01	2.00	2.01	2.01	2.02	2.02	2.02
3 Min.	2.02	2.02	2.02	2.01	2.01	2.01	2.03	2.03	2.04
3½ Min.	2.03	2.03	2.02	2.01	2.02	2.01	2.03	2.03	2.04
4 Min.	2.03	2.03	2.02	2.01	2.02	2.01	2.04	2.04	2.04
4½ Min.	2.03	2.03	2.02	2.01	2.02	2.01	2.04	2.04	2.04
5 Min.	2.04	2.04	2.03	2.01	2.02	2.01	2.04	2.04	2.04
20 Min. Sp.Gr.	1.205	1.200	1.195	1.190	1.190	1.185	1.210	1.210	1.215

*Battery Number 3 failed to give 300 amperes; maximum 200 amperes failed to hold at 30 seconds.

APPENDIX 3a (Sheet 2)

VOLTAGES ON PRE-TEST CHARGE
(DISCARDED BATTERIES)

Battery		5			6			7		
Cell		1	2	3	1	2	3	1	2	3
Time	Rate									
3/26/52										
3:15 PM	0	2.07	2.05	2.06	2.01	2.04	2.01	2.05	2.04	2.04
3:20 PM	5	ON CHARGE - ALL CELLS								
3:25 PM	"	2.13	2.11	2.11	2.14	2.12	2.08	2.12	2.11	2.10
3:50 PM	"	ADJUSTED WATER IN ALL CELLS								
9:45 PM	"	2.17	2.15	2.16	2.17	2.30	2.28	2.17	2.16	2.14
12:00 M	"	2.28	2.28	2.27	2.27	2.32	2.31	2.33	2.31	2.32
3/27/52										
9:00 AM	"	2.31	2.30	2.30	2.31	2.32	2.31	2.34	2.31	2.32
10:25 AM	"	2.31	2.30	2.30	2.31	2.31	2.31	2.34	2.31	2.32
10:30 AM		OFF CHARGE ALL CELLS								

SPECIFIC GRAVITY DURING PRE-TEST CHARGE

3/26/52									
9:45 PM	1.180	1.175	1.180	1.225	1.165	1.145	1.135	1.145	1.125
12:00 M	1.225	1.200	1.225	1.245	1.180	1.150	1.195	1.185	1.185
3/27/52									
9:00 AM	1.235	1.200	1.215	1.230	1.195	1.150	1.210	1.200	1.200
10:15 AM	1.245	1.215	1.225	1.245	1.195	1.165	1.215	1.210	1.205

PRE-TEST DISCHARGE AT 300 AMPERES: VOLTAGES

3/27/52									
3:00 PM OCV	2.10	2.08	2.09	2.03	2.03	2.00	2.06	2.03	2.02
5 sec.	1.70	1.68	1.68	1.04	1.54	1.40	1.56	1.63	1.56
30 sec.	1.66	1.67	1.67	0.00	1.36	1.12	1.50	1.60	1.52
5 Min.	1.64	1.66	1.66	* Off	Off	Off	1.43	1.55	1.46
1½ Min.	1.63	1.64	1.64				1.39	1.52	1.44
	- - - - - - - - -			RECOVERY VOLTAGES			- - - - - - - - -		
2 Min.	2.02	2.00	2.02	1.99	2.00	1.98	1.98	1.98	1.98
2½ Min.	2.03	2.01	2.02	2.00	2.02	1.98	2.00	2.00	2.00
3 Min.	2.04	2.02	2.02	2.00	2.02	1.99	2.01	2.01	2.00
3½ Min.	2.04	2.02	2.03	2.00	2.02	1.99	2.01	2.01	2.01
4 Min.	2.04	2.02	2.03	2.00	2.02	2.00	2.02	2.02	2.01
4½ Min.	2.04	2.02	2.03	2.00	2.02	2.00	2.02	2.02	2.02
5 Min.	2.04	2.03	2.04	2.00	2.02	2.00	2.02	2.02	2.02
30 Min. Sp.Gr.	1.225	1.200	1.210	1.220	1.190	1.150	1.205	1.200	1.185

*Battery Number 6 failed to give 300 amperes, maximum 280 amperes failed to hold at 30 seconds.

APPENDIX 3a (Sheet 3)

VOLTAGES ON CHARGE CYCLE 1 - DISCARDED BATTERIES

Battery		1			3			4		
Cell		1 T	2 U	3 T	1 U	2 T	3 U	1 T	2 U	3 T
Time	Rate									
3/27/52										
5:25 PM	0 OCV	2.06	2.05	2.05	2.03	2.04	2.03	2.07	2.06	2.07
5:30 PM	5	START CHARGE - ALL CELLS								
6:00 PM		2.14	2.12	2.12	2.20	2.23	2.19	2.15	2.13	2.15
7:00 PM		2.19	2.18	2.19	2.32	2.34	2.31	2.22	2.18	2.22
8:00 PM		2.29	2.30	2.28	2.33	2.36	2.32	2.28	2.27	2.28
9:00 PM		2.29	2.34	2.30	2.34	2.36	2.33	2.28	2.27	2.28
10:00 PM		2.31	2.36	2.32	2.34	2.37	2.33	2.28	2.28	2.29
10:05 PM		OFF CHARGE - ALL CELLS								

Battery		5			6			7		
Cell		1 U	2 T	3 U	1 T	2 U	3 T	1 U	2 T	3 U
Time	Rate									
3/27/52										
5:25 PM	0 OCV	2.07	2.05	2.06	2.04	2.01	2.00	2.04	2.03	2.03
5:30 PM	5	START CHARGE - ALL CELLS								
6:00 PM		2.14	2.14	2.12	2.19	2.13	2.12	2.12	2.11	2.10
7:00 PM		2.19	2.17	2.18	2.25	2.30	2.30	2.16	2.14	2.13
8:00 PM		2.28	2.26	2.27	2.30	2.32	2.34	2.30	2.26	2.27
9:00 PM		2.29	2.28	2.27	2.36	2.33	2.34	2.34	2.30	2.33
10:00 PM		2.30	2.31	2.28	2.33	2.33	2.33	2.35	2.32	2.34
10:05 PM		OFF CHARGE - ALL CELLS								

SPECIFIC GRAVITIES DURING CHARGE CYCLE 1

Battery	1			3			4		
Cell	1 T	2 U	3 T	1 U	2 T	3 U	1 T	2 U	3 T
Time									
3/27/52									
5:25 PM	1.205	1.200	1.195	1.190	1.190	1.185	1.210	1.210	1.215
6:00 PM	1.235	1.215	1.225	1.193	1.235	1.200	1.245	1.215	1.250
7:00 PM	1.235	1.215	1.225	1.195	1.230	1.200	1.248	1.225	1.250
8:00 PM	1.235	1.215	1.230	1.195	1.230	1.200	1.250	1.225	1.255
9:00 PM	1.245	1.220	1.235	1.200	1.230	1.200	1.250	1.235	1.255
10:00 PM	1.245	1.220	1.235	1.200	1.230	1.200	1.255	1.230	1.260

Battery	5			6			7		
Cell	1 U	2 T	3 U	1 T	2 U	3 T	1 U	2 T	3 U
3/27/52									
5:25 PM	1.225	1.200	1.210	1.220	1.190	1.150	1.205	1.200	1.185
6:00 PM	1.225	1.235	1.210	1.260	1.200	1.200	1.215	1.225	1.190
7:00 PM	1.225	1.230	1.215	1.260	1.195	1.200	1.215	1.220	1.200
8:00 PM	1.235	1.230	1.215	1.270	1.195	1.190	1.220	1.225	1.200
9:00 PM	1.235	1.240	1.220	1.265	1.195	1.195	1.225	1.230	1.205
10:00 PM	1.240	1.240	1.225	1.260	1.195	1.195	1.220	1.225	1.205

APPENDIX 3a (sheet 4)

DISCHARGE VOLTAGES DURING CYCLE 1 - DISCARDED BATTERIES

Battery	1			3			4		
Cell	1 T	2 U	3 T	1 U	2 T	3 U	1 T	2 U	3 T
300 amperes									
Time 3/27/52 10:30 P									
OCV	2.18	2.17	2.17	2.11	2.12	2.10	2.14	2.14	2.14
5"	1.74	1.73	1.70				1.62	1.72	1.73
30"	1.72	1.72	1.68	NO DISCHARGE			1.59	1.70	1.71
1'	1.69	1.70	1.66	POSSIBLE AT			1.55	1.69	1.70
1 1/2'	1.67	1.69	1.63	300 amps.			1.51	1.67	1.68
2'	1.66	1.68	1.62				1.48	1.65	1.66
2 1/2'	1.64	1.66	1.60						
3'	1.62	1.65	1.58				1.44	1.63	1.63
3 1/2'	1.61	1.65	1.56						
4'	1.58	1.63	1.54				1.33	1.60	1.59
4 1/2'	1.56	1.62	1.51						
5'	1.54	1.60	1.48				1.04	1.56	1.54
6'	1.46	1.57	1.36				R*	1.52	1.50
7'	1.26	1.54	0.94						
7 1/2'	0.88	1.54	R						
200 amperes									
Time									
8'	0.30	1.64	R	5"	0.75	0.78 0.75	6 1/2'	R	1.64	1.61
				30"	0.54	0.54 0.44	7'	R	1.62	1.59
							8'	R	1.58	1.54
							9'	R	1.40	1.36
							9 1/2'	R	1.26	1.32

* Reversed
T = Treated
U = Untreated
" = seconds
' = minutes

APPENDIX 3a (Sheet 5)

DISCHARGE VOLTAGES DURING CYCLE 1 - DISCARDED BATTERIES

Battery	1			3			4		
Cell	1 T	2 U	3 T	1 U	2 T	3 U	1 T	2 U	3 T
				100 AMPERES					
Time 3/27/52				Time			Time		
8½'	1.16	1.76	1.10	1'	1.01	1.04	0.98	10'	R	1.33	1.38
9'	1.18	1.76	1.08	2'	0.74	0.70	0.60	11'	R	1.28	1.30
10'	1.10	1.76	0.40	2½'	0.53	0.45	0.32	12'	R	1.24	1.20
10½'	0.78	1.76	0.00					13'	R	1.22	1.18
								14'	R	1.21	1.18
								15'	R	1.16	1.14
								16'	R	0.54	0.64
				50 AMPERES							
11'	1.41	1.83	1.22	3'	1.10	1.04	0.98	16½'	0.00	1.15	1.10
12'	1.52	1.84	1.22	4'	1.03	0.93	0.86	17'	0.48	1.15	1.04
13'	1.63	1.84	1.11	5'	0.89	0.76	0.70	18'	0.64	1.02	0.89
14'	1.62	1.83	0.78	6'	0.74	0.55	0.52	19'	0.65	0.72	0.65
15'	1.54	1.83	0.43	7'	0.60	0.36	0.41	20'	0.62	0.32	0.30
16'	1.28	1.83	0.14	8'	0.46	0.16	0.24	21'	0.56	0.10	0.10
17'	1.08	1.83	R	9'	0.37	0.04	0.20				
18'	1.04	1.83	R								
19'	0.94	1.83	R								
20'	0.25	1.83	R								
21'	R	1.82	R								
22'	R	1.82	R								

" = SECONDS
' = MINUTES

APPENDIX 3a (Sheet 6)

DISCHARGE VOLTAGES DURING CYCLE 1
(DISCARDED BATTERIES)

Battery	5			6			7		
Cell	1 U	2 T	3 U	1 T	2 U	3 T	1 U	2 T	3 U
300 AMPERES									
Time 3/27/52 10:30 PM				Time			Time		
OCV	2.14	2.12	2.12		2.06	2.02	2.04		2.08	2.04	2.04
5"	1.60	1.70	1.70	5"	0.92	1.58	1.28	5"	1.61	1.64	1.58
30"	1.60	1.68	1.68	30"	R*	1.44	1.12	30"	1.56	1.60	1.54
1'	1.58	1.66	1.66					1'	1.50	1.55	1.49
1½'								1½'	1.46	1.52	1.46
2'	1.58	1.62	1.62					2'	1.44	1.48	1.42
2½'								2½'	1.40	1.46	1.40
3'	1.54	1.60	1.59					3'	1.38	1.43	1.37
4'	1.50	1.57	1.56					4'	1.30	1.36	1.28
5'	1.43	1.53	1.50					5'	1.13	1.23	1.14
6'	1.30	1.49	1.42					5½'	1.00	1.12	0.98
7'	0.00	1.48	1.18								
200 AMPERES											
7½'	R	1.56	1.10	1'	R	1.47	1.14	6'	1.26	1.34	1.28
8'	R	1.52	0.52					7'	1.08	1.22	1.12
								8'	0.72	0.92	0.62

* REVERSED

T = TREATED
U = UNTREATED
" = SECONDS
' = MINUTES

APPENDIX 3a (Sheet 7)

DISCHARGE VOLTAGES DURING CYCLE 1
(DISCARDED BATTERIES)

Battery	5			6				7		
Cell	1 U	2 T	3 U	1 T	2 U	3 T		1 U	2 T	3 U
				100 AMPERES						
Time			Time				Time			
3/27/52										
3½'	0.56	1.72	1.20	1½'	R	1.66	1.44	8½'	1.28	1.35	1.28
9'	0.54	1.71	1.21	2'	R	1.66	1.44	9'	1.30	1.34	1.26
10'	R	1.70	1.22	3'	R	1.63	1.34	10'	1.04	0.74	0.34
11'	R	1.70	1.21	4'	R	1.59	1.22	11'	0.78	0.18	0.08
12'	R	1.68	1.14	5'	R	1.54	1.06				
13'	R	1.67	0.00	6'	R	1.49	0.94				
				50 AMPERES						
13½'	R	1.76	0.82	6½'	R	1.68	1.40	12'	1.40	1.10	1.16
14'	R	1.77	0.78	7'	R	1.68	1.40	13'	1.45	1.08	1.18
15'	R	1.77	0.46	8'	R	1.67	1.38	14'	1.62	0.92	1.13
16'	R	1.77	0.03	9'	R	1.66	1.34	15'	1.66	0.50	0.94
17'	R	1.77	R	10'	R	1.64	1.30	16'	1.66	0.14	0.58
18'	R	1.77	R	11'	R	1.62	1.25	17'	1.66	R	0.27
				12'	R	1.60	1.20	18'	1.64	R	0.02
				13'	R	1.58	1.16	19'	1.61	R	R
				14'	R	1.54	1.12	20'	1.54	R	R
				15'	R	1.52	1.08				
				16'	R	1.48	1.03				
				17'	R	1.43	0.98				
				18'	R	1.39	0.94				
				19'	R	1.36	0.90				
				20'	R	1.32	0.86				
				21'	R	1.28	0.82				
				22'	R	1.24	0.78				
				23'	R	1.20	0.75				
				24'	R	1.15	0.72				
				25'	R	1.11	0.68				
				26'	R	1.08	0.66				
				27'	R	1.02	0.60				
				28'	R	0.94	0.53				
				29'	R	0.90	0.51				
				30'	R	0.88	0.50				

APPENDIX 3a (Sheet 8)

VOLTAGES OF DISCARDED BATTERIES ON CHARGE CYCLE 2

Battery		1			3			4		
Cell		1 T	2 U	3 T	1 U	2 T	3 U	1 T	2 U	3 T
Time 3/28/52	Rate									
2:40 AM	0	2.00	1.99	1.98	2.02	2.02	2.02	1.61	1.99	2.00
2:45 AM	0	WATER ADDED TO ALL CELLS								
2:50 AM	5	ON CHARGE -								
2:55 AM		2.04	2.03	2.03	2.13	2.16	2.15	1.68	2.02	2.03
8:45 AM		2.11	2.10	2.11	2.34	2.36	2.32	2.13	2.11	2.12
11:10 AM		2.14	2.13	2.13	2.34	2.36	2.33	2.15	2.13	2.15
2:00 PM		2.24	2.23	2.23	2.32	2.34	2.31	2.17	2.16	2.19
3:00 PM		2.27	2.28	2.27	2.32	2.34	2.31	2.22	2.20	2.22
4:00 PM		2.29	2.32	2.30	2.33	2.34	2.32	2.28	2.26	2.26
5:00 PM		2.30	2.34	2.31	2.34	2.35	2.32	2.30	2.27	2.28

Battery		5			6			7		
Cell		1 U	2 T	3 U	1 T	2 U	3 T	1 U	2 T	3 U
2:40 AM	0	1.60	1.98	1.99	0.16	1.96	1.94	1.96	1.95	1.95
2:45 AM	0	WATER ADDED TO ALL CELLS								
2:50 AM	5	ON CHARGE								
2:55 AM		1.68	2.02	2.03	0.42	2.02	2.00	2.02	2.00	2.01
8:45 AM		2.13	2.10	2.11	0.05	2.14	2.13	2.12	2.10	2.10
11:10 AM		2.15	2.12	2.13	0.47	2.24	2.28	2.16	2.14	2.13
2:00 PM		2.26	2.24	2.26	0.48	2.33	2.30	2.28	2.21	2.25
3:00 PM		2.28	2.26	2.26	0.48	2.33	2.30	2.30	2.26	2.29
4:00 PM		2.30	2.28	2.28	0.48	2.33	2.30	2.31	2.28	2.30
5:00 PM		2.30	2.29	2.28	0.48	2.33	2.30	2.32	2.29	2.31

APPENDIX 3a (Sheet 9)

SPECIFIC GRAVITIES OF DISCARDED BATTERIES DURING CHARGE CYCLE 2

Battery	1			3			4		
Cell	1 T	2 U	3 T	1 U	2 T	3 U	1 T	2 U	3 T
Time									
6:45 AM	1.170	1.155	1.165	1.185	1.210	1.190	1.175	1.155	1.165
11:10 AM	1.185	1.180	1.185	1.190	1.215	1.195	1.200	1.180	1.195
2:00 PM	1.210	1.200	1.205	1.205	1.215	1.195	1.215	1.200	1.215
3:00 PM	1.225	1.210	1.225	1.200	1.220	1.200	1.225	1.220	1.215
4:00 PM	1.225	1.215	1.225	1.200	1.220	1.200	1.225	1.220	1.220
5:00 PM	1.225	1.215	1.225	1.195	1.215	1.195	1.225	1.215	1.225

Battery	5			6			7		
Cell	1 U	2 T	3 U	1 T	2 U	3 T	1 U	2 T	3 U
Time									
8:45 AM	1.160	1.170	1.165	1.180	1.145	1.145	1.145	1.140	1.135
11:10 AM	1.190	1.190	1.185	1.185	1.165	1.160	1.160	1.160	1.150
2:00 PM	1.210	1.210	1.205	1.180	1.185	1.175	1.180	1.180	1.180
3:00 PM	1.220	1.210	1.210	1.185	1.190	1.180	1.190	1.185	1.185
4:00 PM	1.225	1.220	1.220	1.180	1.190	1.180	1.200	1.190	1.185
5:00 PM	1.225	1.215	1.220	1.180	1.190	1.180	1.200	1.195	1.190

APPENDIX 3a (Sheet 10)

DISCHARGE VOLTAGES OF DISCARDED BATTERIES CYCLE 2

Battery	1			3			4		
Cell	1 T	2 U	3 T	1 U	2 T	3 U	1 T	2 U	3 T
300 AMPERES									
Time 6:15 PM									
OCV	2.14	2.13	2.13	2.08	2.10	2.08	2.12	2.12	2.12
5"	1.74	1.72	1.69				1.52	1.72	1.72
30"	1.71	1.71	1.68	NO DISCHARGE			1.50	1.69	1.70
1'	1.69	1.69	1.65	POSSIBLE AT			1.50	1.68	1.70
2'	1.66	1.67	1.62	300 AMPS.			1.49	1.67	1.69
3'	1.63	1.65	1.58				1.46	1.65	1.67
4'	1.58	1.61	1.53				1.42	1.64	1.64
5'	1.52	1.58	1.44				1.26	1.60	1.61
6'	1.41	1.54	1.21				0.50	1.55	1.56
7'	1.25	1.50	0.10						
200 AMPERES									
7½'	1.00	1.67	R	5"	1.04	0.84	0.76	5½' R	1.66	1.67
				30"	0.74	0.64	0.64	6' R	1.64	1.66
								7' R	1.61	1.64
								8' R	1.56	1.60
								9' R	1.32	1.54
								9½' R	1.10	1.51
100 AMPERES									
8'	0.88	1.76	R	1'	1.23	0.99	0.95	10' R	1.42	1.68
9'	0.94	1.76	R	2'	1.01	0.91	0.88	11' R	1.12	1.66
10'	0.42	1.75	R	3'	0.46	0.34	0.30	12' R	0.76	1.62
10½'	R	1.74	R					13' R	0.28	1.55
								13½' R	0.02	1.50
50 AMPERES									
11'	1.08	1.84	0.40	3½'	1.16	1.04	1.05	14' R	1.26	1.68
12'	0.90	1.82	0.38	4'	1.10	0.99	1.01	15' 0.44	1.28	1.68
13'	0.16	1.82	0.04	5'	1.01	0.81	0.85	16' 0.60	1.28	1.65
14'	R	1.83	R	6'	0.85	0.65	0.72	17' 0.62	1.25	1.62
15'	R	1.82	R	7'	0.70	0.40	0.55	18' 0.54	1.04	1.48
16'	R	1.82	R	8'	0.56	0.20	0.42	19' 0.51	0.30	1.40
								20' 0.46	R	1.30
								21' 0.42	R	1.20

APPENDIX 3a (Sheet 11)

DISCHARGE VOLTAGES FOR DISCARDED BATTERIES CYCLE 2

Battery	5			6			7		
Cell	1 U	2 T	3 U	1 T	2 U	3 T	1 U	2 T	3 U
				300 AMPERES					
Time 6:15 PM				Time			Time		
OCV	2.12	2.10	2.11	0.07	2.04	2.03	OCV 2.09	2.04	2.03
5"	1.62	1.68	1.69				5" 1.42	1.68	1.56
30"	1.57	1.66	1.68	NO DISCHARGE			30" 1.48	1.59	1.51
1'	1.56	1.65	1.66	POSSIBLE AT			1' 1.44	1.50	1.42
2'	1.52	1.63	1.64	300 AMPS.			2' 1.42	1.47	1.44
3'	1.52	1.60	1.61				3' 1.36	1.42	1.40
4'	1.47	1.56	1.56				4' 1.26	1.32	1.31
5'	1.41	1.52	1.50				5' 1.08	1.16	1.12
6'	1.23	1.45	1.40				5½' 0.94	1.04	1.01
7'	R	1.50	1.24	200 AMPERES					
7½'	R	1.52	1.02	NO DISCHARGE POSSIBLE AT 200 AMPS.			6' 1.18	1.24	1.23
							7' 0.92	1.00	0.96
				100 AMPERES					
8'	R	1.70	1.24				7½' 1.46	1.44	1.46
9'	R	1.68	1.19	NO DISCHARGE			8' 1.46	1.42	1.46
10'	R	1.68	1.20	POSSIBLE AT			9' 1.42	1.32	1.41
11'	R	1.66	1.18	100 AMPS.			10' 1.20	1.02	1.17
12'	R	1.64	0.44				11' 0.88	R	0.50
				50 AMPERES					
12½'	R	1.75	1.18	5"	R	---- ----	11½' 1.44	0.90	1.24
13'	R	1.75	1.16	30"	R	1.89 1.82	12' 1.48	0.72	1.26
14'	R	1.75	1.15	1'	R	1.88 1.82	13' 1.66	0.34	1.26
15'	R	1.75	0.72	2'	R	1.88 1.82	14' 1.66	0.12	1.24
16'	R	1.75	0.14	3'	R	1.86 1.80	15' 1.62	R	0.88
17'	R	1.75	R	4'	R	1.86 1.78	16' 1.62	R	0.50
				5'	R	1.86 1.78	17' 1.58	R	0.00
				6'	R	1.85 1.76	18' 1.54	R	R
				7'	R	1.85 1.76			
				8'	R	1.86 1.76			
				9'	R	1.82 1.70			
				10'	R	1.82 1.70			
				11'	R	1.82 1.68			
				12'	R	1.81 1.66			
				13'	R	1.80 1.64			
				14'	R	1.77 1.58			
				15'	R	1.76 1.52			
				16'	R	1.74 1.50			
				17'	R	1.73 1.46			
				18'	R	1.73 1.44			
				19'	R	1.72 1.41			
				20'	R	1.71 1.36			

APPENDIX 3a (Sheet 12)

VOLTAGES (STAND DISCHARGE)
(DISCARDED BATTERIES)

Date 3/29/52

Battery	1			3			4		
Cell	1 T	2 U	3 T	1 U	2 T	3 U	1 T	2 U	3 T
				300 AMPERES					
OCV	2.00	1.99	1.99	2.01	2.01	2.01	2.00	1.99	2.00
Time									
5"	1.44	1.58	1.36	No discharge possible			1.44	1.52	1.56
30"	1.29	1.51	1.21				1.00	1.41	1.50
1'	1.06	1.46	0.92						
				200 AMPERES					
1½'	0.34	1.52	0.12	No discharge possible			1' R	1.48	1.58
							1½' R	1.31	1.54
				100 AMPERES					
2'	R*	1.62	R	5" 0.75	0.42	0.54	2' R	1.42	1.65
				30" 0.54	0.04	0.32	2½' R	1.22	1.62
							3' R	0.60	1.57
				50 AMPERES					
2½'	R	1.81	R	1' 0.94	0.45	0.68	3½' R	R	1.68
				1½' 0.72	0.12	0.48	4' R	R	1.72
				2' 0.55	R	0.31			
				2½' 0.48	R	0.26			

*REVERSED

APPENDIX 3a (Sheet 13)

VOLTAGES (STAND DISCHARGE) Cont'd Date: 3/29/52
(DISCARDED BATTERIES)

Battery	5			6			7		
Cell	1 U	2 T	3 U	1 T	2 U	3 T	1 U	2 T	3 U
				300 AMPERES					
OCV	2.01	1.96	1.99	0.00	1.99	1.97	2.00	1.97	1.96
Time							Time		
5"	1:54	1:54	1.54	No discharge			5"	1:34	1.34	1.38
30"	1.04	1.44	1.34	possible			30"	1.12	1:10	1:18
							1'	0.78	0.72	0.94
				200 AMPERES					
1'	R*	1:56	1:34	No discharge			1½'	0.86	0.50	1.06
1½'	R	1.53	1.12	possible					
				100 AMPERES					
2'	R	1:66	1:08	No discharge			2'	1:20	0.66	1:41
2½'	R	1.68	0.42	possible			2½'	1:18	R	1.32
							3'	0.60	R	1.28
				50 AMPERES					
3'	R	1:75	R	No discharge			3½'	0.68	R	1.46
3½'	R	1.76	R	possible			4'	0.40	R	1.42
							4½'	R	R	1.28

*REVERSED

T = TREATED
U = UNTREATED
" = SECONDS
' = MINUTES

APPENDIX 3a(Sheet 14)

VOLTAGES ON CHARGE CYCLE 3 - DISCARDED BATTERIES

Battery		1			3			4		
Cell		1 T	2 U	3 T	1 U	2 T	3 U	1 T	2 U	3 T
Time	Rate									
3/29/52										
9:30 AM	1.5 OCV	2.02	2.02	2.02	2.08	2.10	2.08	1.62	2.00	2.00
3/30/52										
9:45 AM	1.5	2.11	2.10	2.10	2.25	2.26	2.25	2.13	2.10	2.11
3/31/52										
9:15 AM	1.5	2.24	2.26	2.24	2.24	2.26	2.24	2.27	2.22	2.24
9:30 AM	5	RAISED RATE FOR ALL CELLS								
10:40 AM	5	2.29	2.34	2.31	2.35	2.35	2.34	2.35	2.27	2.30
11:00 A	12.5	RAISED RATE FOR ALL CELLS								
1:40 PM	15	2.39	2.41	2.38	2.46	2.48	2.45	2.42	2.35	2.38
1:45 PM	0									
2:00 PM	20									
9:30 PM	20	2.38	2.38	2.37	2.43	2.46	2.44	2.38	2.32	2.35
4/1/52										
8:30 AM	20	2.40	2.40	2.38	2.42	2.44	2.42	2.40	2.36	2.36
4:15 PM	20	2.40	2.39	2.38	2.42	2.43	2.41	2.40	2.33	2.36
11:00 PM	20	2.40	2.39	2.39	2.42	2.44	2.40	2.41	2.34	2.36
4/2/52										
8:30 AM	20	2.41	2.40	2.40	2.41	2.43	2.39	2.42	2.35	2.37
4:15 PM	20	2.40	2.40	2.39	2.40	2.43	2.40	2.42	2.34	2.37
10:00 PM	20	2.41	2.40	2.40	2.40	2.42	2.39	2.42	2.34	2.38
4/3/52										
8:30 AM	20	2.41	2.40	2.41	2.40	2.41	2.40	2.42	2.35	2.38
4:15 PM	20	2.41	2.40	2.40	2.40	2.41	2.40	2.43	2.35	2.38
4/4/52										
12:01 AM	20	2.41	2.39	2.40	2.39	2.41	2.38	2.42	2.34	2.38
4:15 PM	20	2.40	2.39	2.40	2.38	2.42	2.39	2.42	2.34	2.37
11:30 PM	20	2.42	2.40	2.41	2.39	2.43	2.39	2.44	2.35	2.38
4/5/52										
7:15 PM	20	2.40	2.38	2.40	2.37	2.42	2.36	2.43	2.32	2.37
4/6/52										
11:10 PM	20	2.41	2.39	2.40	2.39	2.44	2.35	2.46	2.35	2.40
4/7/52										
10:45 AM	20	2.41	2.39	2.41	2.38	2.47	2.40	2.46	2.36	2.39
11:00 AM	20	OFF CHARGE - ALL CELLS								

APPENDIX 3a (Sheet 15)

VOLTAGES ON CHARGE CYCLE 3 - DISCARDED BATTERIES

Battery			5			6			7		
Cell			1 U	2 T	3 U	1 T	2 U	3 T	1 U	2 T	3 U
Time	Rate										
3/29/52											
9:30 AM	1.5	OCV	1.63	1.99	2.01	0.02	2.05	2.03	1.98	1.95	1.96
3/30/52											
9:45 AM	1.5		2.13	2.10	2.11	0.03	2.28	2.27	2.11	2.09	2.08
3/31/52											
9:15 AM	1.5		2.27	2.24	2.23	0.04	2.26	2.26	2.24	2.22	2.23
9:30 AM	5		RAISED RATE FOR ALL CELLS								
10:40 AM	5		2.35	2.29	2.30	0.12	2.30	2.36	2.32	2.30	2.33
11:00 AM	12.5		RAISED RATE FOR ALL CELLS								
1:40 PM	15		2.36	2.41	2.37	2.14	2.44	2.42	2.40	2.38	2.40
1:45 PM	0										
2:00 PM	20										
9:30 PM	20		2.38	2.32	2.34	2.35	2.39	2.40	2.38	2.37	2.38
4/1/52											
8:30 AM	20		2.40	2.37	2.36	2.17	2.40	2.40	2.40	2.38	2.39
4:15 PM	20		2.39	2.32	2.35	2.19	2.39	2.40	2.38	2.37	2.38
11:00 PM	20		2.41	2.33	2.36	2.21	2.40	2.40	2.40	2.38	2.39
4/2/52											
8:30 AM	20		2.42	2.34	2.36	2.24	2.38	2.39	2.40	2.38	2.39
4:15 PM	20		2.42	2.33	2.36	2.24	2.38	2.37	2.39	2.37	2.38
10:00 PM	20		2.42	2.34	2.36	2.24	2.38	2.36	2.40	2.37	2.39
4/3/52											
8:30 AM	20		2.43	2.34	2.38	2.26	2.36	2.33	2.41	2.38	2.39
4:15 PM	20		2.43	2.34	2.37	2.25	2.36	2.32	2.41	2.37	2.38
4/4/52											
12:01 AM	20		2.42	2.33	2.36	2.25	2.35	2.31	2.40	2.36	2.38
4:15 PM	20		2.43	2.34	2.36	2.26	2.34	2.29	2.41	2.36	2.37
11:30 PM	20		2.44	2.34	2.37	2.26	2.34	2.27	2.42	2.36	2.38
4/5/52											
7:15 PM	20		2.43	2.33	2.37	2.27	2.34	2.26	2.38	2.36	2.37
4/6/52											
11:10 PM	20		2.45	2.34	2.39	2.38	2.35	2.25	2.40	2.37	2.39
11:30 PM	20		ALL CELLS WATERED								
4/7/52											
10:45 AM	20		2.44	2.35	2.38	2.28	2.32	2.24	2.39	2.37	2.38
11:00 AM	20		OFF CHARGE - ALL CELLS								

APPENDIX 3a (Sheet 16)

SPECIFIC GRAVITIES DURING CHARGE CYCLE 3
(DISCARDED BATTERIES)

Battery		1			3			4		
Cell		1 T	2 U	3 T	1 U	2 T	3 U	1 T	2 U	3 T
Time	Rate									
3/30/52										
9:45 AM	1.5	1.190	1.185	1.195	1.185	1.210	1.195	1.210	1.180	1.205
3/31/52										
9:15 AM	1.5	1.225	1.225	1.225	1.200	1.215	1.205	1.240	1.220	1.235
9:30 PM	20*	1.245	1.220	1.235	1.205	1.215	1.210	1.265	1.245	1.260
4/1/52										
8:30 AM	20	1.260	1.220	1.245	1.200	1.210	1.210	1.280	1.260	1.265
4:45 PM	20*	1.275	1.235	1.255	1.210	1.215	1.215	1.300	1.270	1.275
11:00 PM	20*	1.250	1.220	1.240	1.195	1.200	1.195	1.285	1.265	1.280
4/2/52										
8:30 AM	20	1.260	1.220	1.245	1.200	1.205	1.195	1.290	1.265	1.270
4:15 PM	20*	1.260	1.220	1.245	1.200	1.205	1.195	1.315	1.270	1.285
10:00 PM	20*	1.260	1.220	1.240	1.195	1.200	1.205	1.290	1.270	1.275
4/3/52										
8:30 AM	20	1.265	1.230	1.265	1.200	1.200	1.205	1.300	1.265	1.280
4:15 PM	20*	1.250	1.210	1.250	1.200	1.200	1.200	1.300	1.270	1.285
4/4/52										
12:01 AM	20*	1.255	1.210	1.250	1.200	1.195	1.200	1.310	1.270	1.280
4:15 PM	20*	1.265	1.210	1.260	1.200	1.210	1.205	1.315	1.285	1.295
11:30 PM	20*	1.260	1.215	1.250	1.200	1.210	1.205	1.295	1.265	1.280
4/5/52										
7:15 PM	20*	1.230	1.225	1.270	1.200	-----	1.205	-----	1.285	-----
4/6/52										
11:00 PM	20*	-----	-----	-----	1.200	-----	-----	-----	-----	1.305
4/7/52										
10:45 AM	20*	1.255	1.210	1.245	1.195	1.195	1.195	1.285	1.275	1.280

*All cells watered following these readings of specific gravity.

APPENDIX 3a (Sheet 17)

SPECIFIC GRAVITIES DURING CHARGE CYCLE 3
(DISCARDED BATTERIES)

Battery		5			6			7		
Cell		1 U	2 T	3 U	1 T	2 U	3 T	1 U	2 T	3 U
Time	Rate									
3/30/52										
9:45 AM	1.5	1.200	1.195	1.185	1.140	1.195	1.180	1.170	1.165	1.160
3/31/52										
9:15 AM	1.5	1.240	1.220	1.220	1.140	1.210	1.185	1.215	1.200	1.200
9:30 PM	20*	1.255	1.255	1.240	1.160	1.210	1.180	1.225	1.220	1.225
4/1/52										
8:30 AM	20	1.280	1.230	1.240	1.175	1.210	1.175	1.240	1.225	1.230
4:45 PM	20*	1.295	1.245	1.255	1.200	1.225	1.190	1.255	1.235	1.245
11:00 PM	20*	1.285	1.235	1.250	1.210	1.215	1.180	1.245	1.225	1.240
4/2/52										
8:30 AM	20	1.295	1.240	1.255	1.230	1.225	1.200	1.255	1.235	1.245
4:15 PM	20*	1.315	1.245	1.260	1.240	1.220	1.195	1.260	1.240	1.245
10:00 PM	20*	1.295	1.235	1.265	1.240	1.220	1.195	1.255	1.230	1.240
4/3/52										
8:30 AM	20	1.300	1.245	1.265	1.250	1.230	1.205	1.260	1.245	1.250
4:15 PM	20*	1.305	1.240	1.270	1.250	1.225	1.200	1.245	1.235	1.240
4/4/52										
12:01 AM	20*	1.305	1.245	1.270	1.255	1.225	1.200	1.250	1.235	1.240
4:15 PM	20*	1.320	1.255	1.275	1.265	1.245	1.210	1.250	1.240	1.245
11:30 PM	20*	1.320	1.250	1.265	1.260	1.230	1.195	1.230	1.220	1.225
4/5/52										
7:15 PM	20*	-----	-----	-----	1.280	1.255	1.220	-----	-----	-----
4/6/52										
11:15 PM	20*	-----	-----	-----	1.280	1.255	1.210	-----	-----	-----
4/7/52										
10:45 AM	20	1.310	1.250	1.300	1.270	1.230	1.195	1.140**	1.135	1.140

*All cells watered following these specific gravity readings.

**Battery No. 7 specific gravity readings checked prior to discharge 1.140, 1.130, 1.140. O.C.V. of cells 1.93-1.95 as compared to average O.C.V. of other cells of 2.06 volts.

APPENDIX 3a (Sheet 18)

DISCHARGE VOLTAGES OF DISCARDED BATTERIES CYCLE 3

Battery	1			3			4		
Cell	1 T	2 U	3 T	1 U	2 T	3 U	1 T	2 U	3 T

300 AMPERES

Time 4/7/52 12:35 PM				Time		Time			
OCV	2.08	2.04	2.07	2.00	2.02	2.01	2.11	2.10	2.10
5"	1.75	1.72	1.74	NO DISCHARGE		5"	1.45	1.72	1.68
30"	1.75	1.71	1.74	POSSIBLE		30"	0.88	1.71	1.65
1'	1.75	1.71	1.75			1'	R*	1.70	1.20
1½'	1.74	1.70	1.73						
2'	1.73	1.69	1.72						
2½'	1.71	1.68	1.71						
3'	1.70	1.66	1.69						
3½'	1.69	1.65	1.68						
4'	1.68	1.64	1.67						
5'	1.64	1.61	1.64						
6'	1.61	1.57	1.61						
7'	1.58	1.54	1.57						
8'	1.53	1.48	1.53						
9'	1.47	1.40	1.47						
10'	1.37	1.07	1.38						
10½'	1.30	0.62	1.30						

200 AMPERES

11'	1.45	0.96	1.46	NO DISCHARGE	1½'	R	1.75	1.63
12'	1.36	0.02	1.37	POSSIBLE	2'	R	1.78	1.66
12½'	1.26	R	1.29		2½'	R	1.78	1.66
					3'	R	1.76	1.65

*REVERSED

APPENDIX 3a (Sheet 19)

DISCHARGE VOLTAGES OF DISCARDED BATTERIES CYCLE 3

Battery	1			3			4		
Cell	1 T	2 U	3 T	1 U	2 T	3 U	1 T	2 U	3 T

100 AMPERES

Time				Time				Time			
13'	1.56	0.82	1.57	5"	0.66	0.46	0.66	3½'	R	1.90	1.86
14'	1.57	0.54	1.58	30"	0.36	0.28	0.30	4'	R	1.90	1.85
15'	1.56	0.20	1.57					5'	R	1.89	1.84
16'	1.53	R	1.54					6'	R	1.88	1.84
17'	1.48	R	1.50					7'	R	1.88	1.83
18'	1.36	R	1.46					8'	R	1.86	1.81
19'	1.23	R	1.37					9'	R	1.86	1.80
20'	1.17	R	1.25					10'	R	1.85	1.80
21'	1.04	R	1.18					11'	R	1.85	1.78
22'	0.66	R	1.08					12'	R	1.84	1.77
								13'	R	1.83	1.75
								14'	R	1.82	1.73
								15'	R	1.82	1.71
								16'	R	1.81	1.70
								17'	R	1.80	1.69
								18'	R	1.79	1.67
								19'	R	1.78	1.65
								20'	R	1.78	1.64
								21'	R	1.76	1.61
								22'	R	1.75	1.58
								23'	R	1.74	1.56
								24'	R	1.72	1.53
								25'	R	1.71	1.50
								26'	R	1.70	1.47
								27'	R	1.69	1.44
								28'	R	1.66	1.39
								29'	R	1.64	1.35
								30'	R	1.62	1.33
								31'	R	1.60	1.30
								32'	R	1.56	1.26
								33'	R	1.54	1.22
								34'	R	1.50	1.15
								35'	R	1.46	1.07
								36'	R	1.42	0.98
								37'	R	1.36	0.82
								38'	R	1.33	0.73
								39'	R	1.30	0.60

APPENDIX 3a (Sheet 20)

DISCHARGE VOLTAGES OF DISCARDED BATTERIES CYCLE 3

Battery	1			3			4		
Cell	1 T	2 U	3 T	1 U	2 T	3 U	1 T	2 U	3 T
50 AMPERES									
Time				Time			Time		
22-1/2'	1.20	0.25	1.41	1'	0.86	0.80	0.84	39-1/2' R 1.54	1.30
23'	1.22	0.24	1.44	2'	0.11	0.26	0.20	40' R 1.56	1.32
24'	1.21	0.21	1.46	2-1/2'	0.00	0.30	0.15	41' R 1.56	1.24
25'	1.17	0.17	1.46					42' R 1.55	1.12
26'	1.08	0.09	1.42					43' R 1.54	1.09
27'	1.00	0.09	1.39					44' R 1.53	1.05
28'	0.36	0.00	1.30					45' R 1.51	1.01
29'	0.75	R	1.25					46' R 1.50	0.93
30'	0.61	R	1.21					47' R 1.48	0.94
31'	0.54	R	1.17					48' R 1.45	0.38
32'	0.43	R	1.12					49' R 1.43	0.35
33'	0.35	R	1.04					50' R 1.41	0.30
								51' R 1.38	0.75
								52' R 1.35	0.68
								53' R 1.32	0.60
								54' R 1.32	0.54
								55' R 1.30	0.50
								56' R 1.28	0.41
								57' R 1.25	0.34
								58' R 1.20	0.20

APPENDIX 3a (Sheet 21)

DISCHARGE VOLTAGES OF DISCARDED BATTERIES CYCLE 3

Battery	5			6			7		
Cell	1 U	2 T	3 U	1 T	2 U	3 T	1 U	2 T	3 U

300 AMPERES

Time 4/7/52 12:35 PM				Time				Time			
OCV	2.14	2.08	2.10		2.01	2.04	1.98		1.95	1.95	1.93
5"	1.80	1.88	1.82		No discharge			5"	1.06	1.42	1.32
30"	1.55	1.66	1.62		possible			30"	R	1.30	1.10
1'	1.42	1.62	1.60								
1'15"	1.37	1.60	1.58								
1½'	1.32	1.62	1.56								
1'45"	1.28	1.61	1.55								
2'	1.22	1.60	1.53								
3'	0.88	1.55	1.48								
3½'	0.65	1.53	1.47								

200 AMPERES

4'	0.98	1.66	1.62	5"	0.24	1.38	0.72	1'	R	1.32	1.14
5'	0.70	1.64	1.58	30"	R	1.30	0.62				
6'	0.28	1.62	1.54								
7'	R	1.58	1.48								
8'	R	1.52	1.41								
9'	R	1.46	1.32								
9½'	R	1.43	1.28								

APPENDIX 3a (Sheet 22)

DISCHARGE VOLTAGES OF DISCARDED BATTERIES CYCLE 3

Battery		5			6				7		
Cell	1 U	2 T	3 U		1 T	2 U	3 T		1 U	2 T	3 U
100 AMPERES											
Time				Time				Time			
10'	R	1.67	1.64	1'	R	1.46	0.93	1½'	0.00	1:70	1.42
11'	R	1.67	1.62	1½'	R	1.30	0.46	2'	R	1.62	1.32
12'	R	1.65	1.60					3'	R	1:50	1.10
13'	R	1:64	1:58					4'	R	1.28	0.80
14'	R	1.62	1.55					5'	R	1.00	0.60
15'	R	1.60	1:53								
16'	R	1.57	1.51								
17'	R	1.53	1:47								
18'	R	1:50	1.44								
19'	R	1.46	1.42								
20'	R	1:40	1.38								
21'	R	1.34	1.36								
22'	R	1:30	1:34								
23'	R	1:25	1:32								
24'	R	1:21	1:28								
25'	R	1.14	1:24								
26'	R	1:04	1.19								
27'	R	0:92	1.10								
28'	R	0:78	1:00								
28½'	R	0.66	0.94								
50 AMPERES											
29'	R	1:07	1:27	2'	R	1.58	1:10	6'	R	1.44	1.07
30'	R	1.12	1.30	3'	R	1.51	0:82	7'	R	1.38	0.98
31'	R	1:09	1.23	4'	R	1.41	0.50	8'	R	1:33	0.91
32'	R	1:06	1.16	5'	R	1.28	0.18	9'	R	1:24	0:78
33'	R	1:04	1.14	6'	R	1.14	R	10'	R	1:14	0:70
34'	R	0.99	1.12	6½'	R	1.10	R	11'	R	1:03	0.66
35'	R	0:96	1.09					12'	R	0:91	0.51
36'	R	0:90	1.07					13'	R	0.83	0.44
37'	R	0:84	1.03					14'	R	0.74	0.36
38'	R	0:81	1.00					15'	R	0.70	0.32
39'	R	0:74	0.90								
40'	R	0.68	0.80								
41'	R	0:60	0:68								
42'	R	0.55	0.57								
43'	R	0.45	0.48								

APPENDIX 3b

VOLTAGES OF DISCARDED BATTERIES ON PRE-TEST CHARGE

Battery		10			12			13		
Cell		1	2	3	1	2	3	1	2	3
Time	Rate									
3/19/52										
2:45 PM	0	OCV 2.06	2.07	2.06	2.06	2.07	2.06	2.04	2.08	2.08
3:00 PM	5	START OF CHARGE								
3:10 PM	5	2.24	2.26	2.26	2.24	2.26	2.25	2.18	2.29	2.28
4:15 PM	5	2.29	2.30	2.30	2.30	2.30	2.29	2.25	2.32	2.31
4:20 PM	0	BATTERIES OFF CHARGE								
3/20/52										
12:05 AM	5	START CHARGING AGAIN								
3:10 AM	5	2.30	2.32	2.32	2.34	2.35	2.36	2.31	2.34	2.32
4:00 AM	5	2.31	2.32	2.32	2.36	2.36	2.37	2.31	2.34	2.33
5:00 AM	5	2.32	2.33	2.33	2.38	2.38	2.38	2.31	2.35	2.35
6:00 AM	5	2.33	2.34	2.34	2.38	2.38	2.38	2.32	2.36	2.37
7:00 AM	5	2.34	2.35	2.35	2.38	2.38	2.38	2.33	2.37	2.38
8:00 AM	5	2.35	2.36	2.36	2.38	2.38	2.38	2.34	2.38	2.38
9:00 AM	5	2.36	2.36	2.36	2.37	2.37	2.37	2.35	2.37	2.38
9:30 AM	0	OFF CHARGE								

Battery		17			18			19		
Cell		1	2	3	1	2	3	1	2	3
3/19/52										
2:45 PM	OCV	2.07	2.06	2.06	2.07	2.08	2.08	2.07	2.06	2.06
3:00 PM	5	START OF CHARGE								
3:10 PM	5	2.28	2.28	2.27	2.30	2.30	2.30	2.28	2.28	2.29
4:15 PM	5	2.30	2.30	2.29	2.31	2.31	2.31	2.30	2.30	2.30
4:20 PM	0	BATTERIES OFF CHARGE								
3/20/52										
12:05 AM	5	START CHARGING AGAIN								
3:10 AM	5	2.22	2.32	2.34	2.23	2.22	2.22	2.33	2.32	2.35
4:00 AM	5	2.34	2.32	2.36	2.33	2.33	2.33	2.35	2.34	2.36
5:00 AM	5	2.35	2.35	2.37	2.34	2.34	2.34	2.36	2.34	2.36
6:00 AM	5	2.38	2.37	2.38	2.35	2.34	2.36	2.37	2.36	2.37
7:00 AM	5	2.38	2.37	2.38	2.36	2.36	2.37	2.37	2.36	2.38
8:00 AM	5	2.38	2.37	2.38	2.37	2.36	2.38	2.37	2.36	2.38
9:00 AM	5	2.38	2.37	2.37	2.36	2.36	2.37	2.36	2.36	2.37
9:30 AM	0	OFF CHARGE								

APPENDIX 3b (Sheet 2)

SPECIFIC GRAVITIES OF DISCARDED BATTERIES ON PRE-TEST CHARGE

Battery	10			12			13		
Cell	1	2	3	1	2	3	1	2	3
Time									
3/19/52									
2:45 PM	-----	1.230	1.230	1.235	1.235	1.235	1.220	1.245	1.245
3/20/52									
3:10 AM	1.223	1.225	1.225	1.240	1.248	1.225	1.205	1.248	1.240
4:00 AM	1.223	1.228	1.228	1.243	1.248	1.225	1.208	1.250	1.243
5:00 AM	1.233	1.235	1.235	1.245	1.248	1.230	1.220	1.255	1.245
6:00 AM	1.233	1.238	1.235	1.248	1.248	1.230	1.223	1.260	1.248
7:00 AM	1.235	1.238	1.235	1.245	1.248	1.230	1.225	1.260	1.250
8:00 AM	1.235	1.238	1.235	1.245	1.250	1.230	1.228	1.260	1.250
9:00 AM	1.235	1.240	1.235	1.245	1.250	1.230	1.230	1.260	1.250

Battery	17			18			19		
Cell	1	2	3	1	2	3	1	2	3
Time									
3/19/52									
2:45 PM	-----	-----	1.220	-----	-----	1.235	1.225	1.230	1.230
3/20/52									
3:10 AM	1.235	1.225	1.225	1.230	1.235	1.235	1.230	1.235	1.230
4:00 AM	1.235	1.228	1.228	1.233	1.235	1.235	1.230	1.235	1.230
5:00 AM	1.240	1.233	1.230	1.235	1.240	1.240	1.235	1.240	1.230
6:00 AM	1.248	1.240	1.230	1.240	1.243	1.243	1.240	1.243	1.235
7:00 AM	1.248	1.240	1.230	1.240	1.243	1.245	1.240	1.245	1.235
8:00 AM	1.248	1.240	1.230	1.243	1.243	1.245	1.240	1.245	1.235
9:00 AM	1.245	1.235	1.230	1.240	1.245	1.245	1.240	1.245	1.235

APPENDIX 3b (Sheet 3)

PRE-TEST DISCHARGE AT 300 AMPERES: VOLTAGES

Battery	10			12			13		
Cell	1	2	3	1	2	3	1	2	3
Time 3/20/52				Time			Time		
OCV	2.15	2.16	2.15		2.14	2.15	2.14		2.13	2.16	2.15
5"	1.65	1.58	1.49	5"	1.72	1.65	1.60	5"	1.68	1.61	1.62
30"	1.64	1.57	1.47	30"	1.69	1.64	1.70	30"	1.64	1.59	1.61
1'	1.62	1.55	1.43	1'	1.68	1.63	1.70	1'	1.63	1.57	1.61
1½'	1.60	1.52	1.40	1½'	1.67	1.61	1.68	1½'	1.62	1.56	1.59
				RECOVERY VOLTAGES					
				2½'	2.04	2.04	2.03	2'	2.02	2.04	2.04
				3'	2.05	2.05	2.03	2½'	2.03	2.06	2.06
				3½'	2.05	2.05	2.04	3½'	2.04	2.06	2.06
				4'	2.05	2.06	2.04	4'	2.04	2.06	2.06
				6½'	2.06	2.06	2.05	7'	2.04	2.06	2.06
Sp.Gr. 20'	1.220	1.225	1.220		1.225	1.230	1.210		1.215	1.235	1.230

Battery	17			18			19		
OCV	2.14	2.14	2.14		2.14	2.14	2.14		2.12	2.11	2.12
5"	1.61	1.60	1.65	5"	1.52	1.55	1.65	5"	1.71	1.65	1.67
30"	1.58	1.59	1.62	30"	1.48	1.50	1.63	30"	1.66	1.65	1.67
1'	1.56	1.57	1.62	1'	1.44	1.46	1.61	1'	1.67	1.65	1.67
1½'	1.54	1.56	1.62	1½'	1.40	1.42	1.60	1½'	1.65	1.63	1.66
				RECOVERY VOLTAGES					
2'	2.02	2.02	2.02	2'	2.02	2.03	2.04	2'	2.04	2.04	2.03
2½'	2.03	2.03	2.03	2½'	2.04	2.04	2.05	2½'	2.04	2.04	2.04
3'	2.04	2.04	2.04	3'	2.04	2.04	2.06	3'	2.04	2.04	2.04
4'	2.04	2.04	2.04	4'	2.05	2.05	2.06	4'	2.05	2.06	2.05
5'	2.05	2.05	2.04	5'	2.06	2.06	2.06	5'	2.06	2.06	2.05
8'	2.06	2.05	2.04	8½'	2.06	2.06	2.06				
Sp.Gr. 20'	1.225	1.220	1.215		1.225	1.225	1.225		1.225	1.225	1.220

SPECIFIC GRAVITIES AFTER CHARGE CYCLE 1

Battery	10			12			13		
	1.250*	1.245	1.255*	1.250	1.265*	1.235	1.245*	1.265	1.265*
Battery	17			18			19		
	1.250	1.255*	1.235	1.265*	1.250	1.265*	1.240	1.260*	1.235

*Treated

APPENDIX 3h (Sheet 4)

DISCHARGE VOLTAGES OF DISCARDED BATTERIES/CYCLE 1.

Battery	10			12			13		
Cell	1 T	2 U	3 T	1 U	2 T	3 U	1 T	2 U	3 T
300 AMPERES									
Time 3/20/52				Time			Time		
OCV	2.18	2.18	2.18		2.15	2.15	2.14	2.13	2.16	2.50
5"	1.68	1.55	1.58	5"	1.74	1.68	1.72	1.71	1.66	1.67
30"	1.63	1.52	1.55	30"	1.70	1.65	1.71	1.64	1.61	1.62
1'	1.58	1.45	1.50	1'	1.67	1.61	1.68	1.62	1.58	1.59
1½'	1.57	1.42	1.47	1½'	1.66	1.60	1.67	1.60	1.56	1.57
2'	1.57	1.40	1.46	2'	1.65	1.58	1.66	1.58	1.54	1.56
2½'	1.55	1.36	1.43	2½'	1.63	1.55	1.65	1.56	1.52	1.54
3'	1.53	1.30	1.40	3'	1.62	1.54	1.64	1.55	1.50	1.53
3½'	1.50	1.24	1.36	3½'	1.61	1.52	1.62	1.53	1.46	1.50
4'	1.50	1.15	1.32	4'	1.60	1.49	1.61	1.50	1.42	1.47
4½'	1.47	1.05	1.26	4½'	1.58	1.45	1.59	1.47	1.38	1.45
5'	1.44	0.93	1.17	5'	1.56	1.41	1.57	1.44	1.35	1.42
5½'	1.41	0.80	1.06	6'	1.52	1.30	1.53	1.39	1.28	1.38
6'	1.37	0.58	0.95	7'	1.46	1.11	1.46	1.31	1.22	1.33
6½'	1.34	0.40	0.81	8'	1.37	0.81	1.37	1.12	1.12	1.27
				9'	1.20	R*	1.03	0.88	1.04	1.20
								R	1.00	1.18
200 AMPERES									
7'	1.51	0.83	1.13	10'	1.29	R	1.05	8'	R	1.15	1.33
7⅓'	1.48	0.71	1.05	10½'	1.19	R	0.65	9'	R	0.97	1.22
8'	1.47	0.60	0.98							
8½'	1.43	0.45	0.88							
9'	1.41	0.32	0.77							
9½'	1.36	0.20	0.66							
10'	1.31	0.06	0.53							

* REVERSED

APPENDIX 3b (Sheet 5)

DISCHARGE VOLTAGES OF DISCARDED BATTERIES CYCLE 1

Battery	10			12			13		
Cell	1 T	2 U	3 T	1 U	2 T	3 U	1 T	2 U	3 T
100 AMPERES									
Time				Time			Time		
10½'	1.58	0.96	1.22	11'	1.50	0.38	1.35	10' R	1.26	1.48
11'	1.58	0.98	1.24	12'	1.51	0.10	1.31	11' R	1.17	1.43
11½'	1.58	0.98	1.23	13'	1.36	R	1.17	12' R	0.95	1.32
12'	1.58	0.94	1.20	14'	1.17	R	0.81	13 R	0.44	1.12
13'	1.56	0.88	1.13	15'	0.62	R	0.46			
14'	1.52	0.78	1.06							
15'	1.47	0.70	1.00							
16'	1.37	0.59	0.90							
17'	1.25	0.49	0.80							
18'	1.16	0.39	0.59							
19'	0.92	0.26	0.32							
20'	0.60	0.16	0.36							
50 AMPERES									
21'	1.22	0.96	1.06	15½'	1.38	0.58	1.30	14' R	1.10	1.28
22'	1.21	1.00	1.08	16'	1.38	0.62	1.30	16' 0.27	0.84	1.16
23'	1.21	1.02	1.07	17'	1.42	0.62	1.38	17' 0.27	0.76	0.91
24'	1.14	1.00	1.03	18'	1.42	0.58	1.40	18' 0.26	0.68	0.54
25'	1.08	0.97	0.97	19'	1.31	0.52	1.37	19' 0.25	0.64	0.22
26'	0.97	0.93	0.90	20'	1.26	0.47	1.28	20' 0.24	0.50	R
27'	0.86	0.88	0.84	21'	1.18	0.42	1.16	21' 0.27	0.48	R
28'	0.73	0.83	0.77	22'	1.00	0.40	1.01			
29'	0.62	0.82	0.74	23'	0.65	0.35	0.83			
30'	0.41	0.76	0.65	24'	0.42	0.33	0.67			
31'	0.24	0.70	0.55	25'	0.31	0.31	0.51			
32'	0.13	0.69	0.46	26'	0.11	0.29	0.35			
33'	0.05	0.61	0.40	27'	R	0.28	0.21			
34'	R	0.55	0.33							
35'	R	0.50	0.26							
36'	R	0.42	0.20							

APPENDIX 3b (Sheet 6)

DISCHARGE VOLTAGES OF DISCHARGED BATTERIES, 1/CYCLE 1

Battery	17			18			19		
Cell	1 U	2 T	3 U	1 T	2 U	3 T	1 U	2 T	3 U
300 AMPERES									
Time				Time			Time		
3/20/52									
OCV	2.14	2.13	2.12		2.14	2.14	2.13	2.12	2.10	2.11
5"	1.60	1.63	1.66	5"	1.54	1.56	1.66	5"	1.72	1.67	1.70
30"	1.60	1.60	1.65	30"	1.47	1.51	1.63	30"	1.68	1.66	1.68
1'	1.56	1.57	1.62	1'	1.42	1.46	1.60	1'	1.67	1.63	1.67
1½'	1.52	1.54	1.60	1½'	1.36	1.40	1.58	1½'	1.65	1.62	1.65
2'	1.50	1.52	1.59	2'	1.33	1.36	1.57	2'	1.65	1.61	1.64
2½'	1.47	1.50	1.57	2½'	1.27	1.31	1.55	2½'	1.63	1.59	1.63
3'	1.44	1.48	1.56	3'	1.22	1.26	1.53	3'	1.61	1.57	1.61
3½'	1.42	1.47	1.55	3½'	1.12	1.16	1.51	3½'	1.61	1.56	1.61
4'	1.39	1.44	1.53	4'	0.96	1.00	1.48	4'	1.60	1.55	1.60
4½'	1.34	1.41	1.50	4½'	0.84	0.85	1.46	4½'	1.58	1.52	1.58
5'	1.28	1.37	1.48	5'	0.69	0.70	1.44	5'	1.57	1.51	1.57
5½'	1.21	1.32	1.45	5½'	0.48	0.58	1.42	5½'	1.55	1.47	1.54
6'	1.12	1.26	1.43					6'	1.53	1.45	1.53
6½'	1.01	1.18	1.39					6½'	1.51	1.41	1.51
7'	0.86	1.07	1.32					7'	1.49	1.36	1.48
								7½'	1.46	1.29	1.46
								8'	1.43	1.18	1.42
								8½'	1.38	1.01	1.37
200 AMPERES									
7½'	1.16	1.29	1.50	6'	0.90	0.86	1.57	9'	1.52	1.21	1.52
8'	1.11	1.27	1.47	7'	0.73	0.64	1.53	10'	1.43	0.96	1.47
8½'	0.98	1.18	1.43	8'	0.53	0.34	1.50	11'	1.37	R	1.31
9'	0.91	1.12	1.40	8½'	0.40	0.18	1.48				
9½'	0.76	1.00	1.32								
10'	0.62	0.84	1.22								
10½'	0.41	0.63	1.10								

APPENDIX 3b (Sheet 7)

DISCHARGE VOLTAGES FOR DISCARDED BATTERIES CYCLE 1

Battery	17			18			19		
Cell	1 U	2 T	3 U	1 T	2 U	3 T	1 U	2 T	3 U
100 AMPERES									
Time				Time			Time		
11'	1.16	1.28	1.50	9'	1.14	1.02	1.68	11 1/2'	1.61	R	1.58
12'	1.19	1.26	1.50	10'	1.18	1.00	1.68	12'	1.61	R	1.58
13'	1.14	1.20	1.46	11'	1.12	0.90	1.67	13'	1.59	R	1.53
14'	1.06	1.11	1.37	12'	1.04	0.80	1.65	14'	1.56	R	1.45
15'	0.95	0.95	1.23	13'	0.95	0.71	1.64	15'	1.49	R	1.21
16'	0.83	0.77	0.98	14'	0.88	0.63	1.62	16'	1.28	R	0.81
17'	0.72	0.52	0.18	15'	0.80	0.53	1.60	17'	1.10	R	0.24
17½'	0.68	0.40	R	16'	0.72	0.45	1.58				
				17'	0.64	0.37	1.54				
				18'	0.56	0.29	1.51				
				19'	0.45	0.19	1.45				
				20'	0.36	0.11	1.36				
				21'	0.27	0.01	1.22				
				22'	0.16	R	1.13				
50 AMPERES									
18'	1.22	1.06	0.91	22½'	0.87	0.70	1.44	17 1/2'	1.37	0.42	1.10
19'	1.30	1.14	0.98	23'	0.92	0.75	1.47	18'	1.44	0.59	1.23
20'	1.29	1.07	0.70	24'	0.95	0.78	1.49	19'	1.47	0.58	1.23
21'	1.26	1.00	0.52	25'	0.94	0.76	1.49	20'	1.46	0.57	1.18
22'	1.21	0.90	0.39	26'	0.91	0.70	1.47	21'	1.36	0.53	1.06
23'	1.16	0.79	0.29	27'	0.86	0.65	1.44	22'	1.28	0.53	0.81
24'	1.10	0.67	0.18	28'	0.82	0.58	1.37	23'	1.23	0.47	0.45
25'	1.01	0.51	0.08	29'	0.77	0.54	1.32	24'	1.17	0.42	0.32
26'	0.91	0.41	R	30'	0.70	0.43	1.27	25'	1.07	0.41	0.13
27'	0.75	0.28	R	31'	0.70	0.41	1.23	26'	0.80	0.40	R
				32'	0.66	0.36	1.21	27'	0.45	0.36	R
				33'	0.61	0.28	1.17				
				34'	0.58	0.22	1.14				
				35'	0.52	0.16	1.08				
				36'	0.44	0.08	1.01				
				37'	0.36	0.03	0.93				
				38'	0.28	0.00	0.86				
				39'	0.19	R	0.80				
				40'	0.08	R	0.72				

APPENDIX 3b (Sheet 8)

VOLTAGES OF DISCARDED BATTERIES ON CHARGE CYCLE 2

Battery			10			12			13	
Cell		1 T	2 U	3 T	1 U	2 T	3 U	1 T	2 U	3 T
Time	Rate Amp.									
3/21/52										
1:20 AM	OCV	1.95	1.96	1.96	1.96	1.98	1.95	1.98	2.15	2.10
1:30 AM		ON CHARGE								
1:30 AM	10	2.06	2.08	2.08	2.06	2.08	2.04	2.05	2.08	2.08
10:30 AM		2.38	2.39	2.40	2.41	2.41	2.39	2.39	2.40	2.41
10:40 AM	10	REDUCED RATE TO 5 AMPERES								
10:41 AM	5									
12:00 M	5	2.34	2.34	2.35	2.36	2.36	2.35	2.36	2.37	2.36
1:30 PM		2.34	2.34	2.34	2.36	2.36	2.34	2.35	2.37	2.36
1:45 PM	5	OFF CHARGE								

Battery			17			18			19	
Cell		1 U	2 T	3 U	1 T	2 U	3 T	1 U	2 T	3 U
3/21/52										
1:20 AM	OCV	1.98	1.97	1.96	1.95	1.95	1.95	1.94	1.96	1.94
1:30 AM		ON CHARGE								
1:30 AM	10	2.06	2.06	2.05	2.06	2.07	2.05	2.03	2.03	2.03
10:30 AM		2.41	2.40	2.40	2.41	2.40	2.40	2.40	2.40	2.40
10:40 AM	10	REDUCED RATE TO 5 AMPERES								
10:41 AM	5									
12:00 M	5	2.36	2.36	2.36	2.36	2.35	2.36	2.36	2.35	2.36
1:30 PM		2.36	2.36	2.36	2.36	2.35	2.36	2.36	2.35	2.36
1:45 PM	5	OFF CHARGE								

APPENDIX 3b (Sheet 9)

SPECIFIC GRAVITIES OF DISCARDED BATTERIES DURING CHARGE
Cycle 2

Battery		10			12			13		
Cell		1 T	2 U	3 T	1 U	2 T	3 U	1 T	2 U	3 T
Time	Rate									
3/21/52										
1:10 AM	0	1.115	1.100	1.110	1.120	1.125	1.085	1.125	1.145	1.155
9:30 AM	10	1.240	1.225	1.235	1.235	1.260	1.225	1.240	1.260	1.260
10:30 AM	10	1.250	1.230	1.245	1.245	1.255	1.220	1.240	1.255	1.260
12:00 M	5	1.255	1.250	1.250	1.250	1.260	1.235	1.245	1.260	1.260
1:30 PM	5	1.250	1.250	1.250	1.250	1.260	1.235	1.245	1.260	1.260

Battery		17			18			19		
Cell		1 U	2 T	3 U	1 T	2 U	3 T	1 U	2 T	3 U
3/21/52										
1:10 AM	0	1.110	1.120	1.110	1.100	1.080	1.115	1.100	1.105	1.095
9:30 AM	10	1.235	1.250	1.240	1.245	1.230	1.240	1.235	1.250	1.235
10:30 AM	10	1.240	1.250	1.235	1.250	1.245	1.250	1.240	1.250	1.235
12:00 M	5	1.250	1.250	1.240	1.260	1.250	1.260	1.240	1.255	1.240
1:30 PM	5	1.250	1.250	1.240	1.260	1.250	1.260	1.240	1.255	1.240

APPENDIX 3b (Sheet 10)

DISCHARGE VOLTAGES OF DISCARDED BATTERIES CYCLE 2

Battery		10			12				13		
Cell	1 T	2 U	3 T		1 U	2 T	3 U		1 T	2 U	3 T
300 AMPERES											
Time				Time				Time			
OCV	2.14	2.13	2.13	OCV	2.14	2.14	2.12	OCV	2.10	2.14	2.13
5"	1.62	1.52	1.55	5"	1.64	1.68	1.72	5"	1.69	1.61	1.64
30"	1.62	1.48	1.55	30"	1.71	1.66	1.72	30"	1.65	1.60	1.62
1'	1.60	1.46	1.52	1'	1.70	1.63	1.71	1'	1.63	1.58	1.60
1½'	1.60	1.44	1.48	1½'	1.69	1.61	1.70	1½'	1.62	1.56	1.58
2'	1.58	1.41	1.46	2'	1.67	1.60	1.69	2'	1.60	1.54	1.57
2½'	1.56	1.37	1.44	2½'	1.66	1.58	1.67	2½'	1.58	1.51	1.55
3'	1.54	1.31	1.40	3'	1.64	1.55	1.66	3'	1.56	1.48	1.52
3½'	1.52	1.24	1.36	3½'	1.63	1.52	1.65	3½'	1.54	1.45	1.50
4'	1.51	1.15	1.31	4'	1.62	1.49	1.64	4'	1.52	1.41	1.47
4½'	1.47	1.02	1.22	4½'	1.60	1.44	1.62	4½'	1.48	1.36	1.44
5'	1.44	0.91	1.13	5'	1.58	1.38	1.60	5'	1.43	1.29	1.38
5½'	1.43	0.74	0.98	5½'	1.56	1.28	1.58	5½'	1.36	1.21	1.33
6'	1.38	0.62	0.88	6'	1.54	1.18	1.55	6'	1.23	1.12	1.27
6½'	1.33	0.38	0.72	6½'	1.51	1.09	1.53	6½'	1.10	1.01	1.21
				7'	1.49	0.89	1.50	7'	0.24	1.01	1.20
				7½'	1.43	0.56	1.46				
				8'	1.38	R	1.41				
200 AMPERES											
7'	1.51	0.83	1.07	8½'	1.52	R	1.54	7½'	R	1.16	1.34
7½'	1.49	0.74	1.00	9'	1.48	R	1.48	8'	R	1.04	1.28
8'	1.46	0.62	0.92	10'	1.38	R	1.35	8½'	R	0.88	1.23
8½'	1.44	0.50	0.83	11'	1.16	R	1.12				
9'	1.42	0.44	0.78	11½'	1.43	R	0.82				
9½'	1.36	0.27	0.65								
10'	1.31	0.14	0.52								
10½'	1.23	0.02	0.40								

APPENDIX 3b (Sheet 11)

DISCHARGE VOLTAGES OF DISCARDED BATTERIES CYCLE 2

Battery	10			12			13		
Cell	1 T	2 U	3 T	1 U	2 T	3 U	1 T	2 U	3 T
100 AMPERES									
Time				Time			Time		
11'	1.54	0.93	1.14	12'	1.44	0.41	1.35	9' R	1.21	1.42
12'	1.54	0.98	1.18	13'	1.31	0.38	1.29	10' R	1.16	1.47
13'	1.52	0.93	1.12	14'	1.08	0.12	1.16	11' R	0.94	1.39
14'	1.45	0.86	1.04	15'	0.36	0.12	0.67	12' R	0.34	1.24
15'	1.34	0.78	0.95	16'	0.06	0.07	0.44	12½' R	0.12	1.07
16'	1.22	0.67	0.82							
17'	1.09	0.57	0.68							
18'	0.81	0.48	0.49							
19'	0.42	0.33	0.18							
19½'	0.24	0.34	0.13							
50 AMPERES									
20'	0.92	0.99	0.86	16½'	0.74	0.51	1.11	13' R	0.87	1.31
21'	0.91	1.07	0.87	17'	0.78	0.57	1.19	14' R	0.80	1.25
22'	0.81	1.12	0.87	18'	0.69	0.60	1.26	15' 0.09	0.70	1.10
23'	0.67	1.12	0.84	19'	0.58	0.62	1.30	16' 0.11	0.54	0.60
24'	0.49	1.08	0.78	20'	0.49	0.63	1.29	17' 0.11	0.41	0.17
25'	0.34	1.03	0.72	21'	0.26	0.54	1.07	18' 0.12	0.35	0.13
26'	0.22	0.95	0.59	22'	0.15	0.53	0.83			
27'	0.17	0.94	0.59	23'	0.08	0.52	0.63			
28'	0.09	0.89	0.50	24'	0.08	0.52	0.49			
29'	0.04	0.82	0.45	25'	R	0.48	0.28			
30'	0.02	0.77	0.39	26'	R	0.43	0.08			
31'	0.02	0.70	0.32							
32'	0.02	0.60	0.28							
33'	0.02	0.51	0.24							
34'	0.04	0.51	0.24							
35'	0.07	0.40	0.21							
36'	0.10	0.24	0.18							
37'	0.12	0.11	0.22							

APPENDIX 3b (Sheet 12)

DISCHARGE VOLTAGES OF DISCARDED BATTERIES CYCLE 2

Battery	17			18			19		
Cell	1 U	2 T	3 U	1 T	2 U	3 T	1 U	2 T	3 U
300 AMPERES									
Time				Time			Time		
OCV	2.12	2.12	2.11	OCV	2.12	2.12	2.12	OCV	2.11	2.09	2.11
5"	1.62	1.62	1.66	5"	1.47	1.51	1.63	5"	1.72	1.68	1.69
30"	1.59	1.59	1.65	30"	1.45	1.48	1.63	30"	1.69	1.67	1.70
1'	1.55	1.57	1.65	1'	1.41	1.45	1.61	1'	1.68	1.65	1.68
1½'	1.53	1.55	1.62	1½'	1.38	1.41	1.59	1½'	1.67	1.64	1.68
2'	1.51	1.54	1.61	2'	1.33	1.36	1.58	2'	1.66	1.62	1.67
2½'	1.48	1.51	1.59	2½'	1.28	1.31	1.56	2½'	1.64	1.60	1.65
3'	1.46	1.49	1.59	3'	1.20	1.21	1.54	3'	1.63	1.59	1.64
3½'	1.40	1.45	1.56	3½'	1.07	1.05	1.51	3½'	1.61	1.56	1.62
4'	1.38	1.43	1.54	4'	0.91	0.85	1.49	4'	1.60	1.54	1.61
4½'	1.33	1.40	1.52	4½'	0.70	0.60	1.47	4½'	1.59	1.51	1.60
5'	1.26	1.36	1.50	5'	0.48	0.36	1.44	5'	1.58	1.49	1.58
5½'	1.18	1.30	1.48	5½'	0.34	0.11	1.43	5½'	1.57	1.45	1.56
6'	1.06	1.22	1.43					6'	1.55	1.40	1.54
6½'	0.95	1.13	1.39					6½'	1.52	1.36	1.53
7'	0.79	1.01	1.35					7'	1.48	1.24	1.49
7½'	0.58	0.86	1.26					7½'	1.45	0.90	1.46
8'	0.31	0.61	1.19					8'	1.40	0.44	1.39
								8½'	1.36	R	1.39
200 AMPERES									
8½'	0.68	0.93	1.37	6'	0.76	0.63	1.57	9'	1.50	R	1.52
9'	0.57	0.79	1.30	7'	0.58	0.36	1.54	9½'	1.46	R	1.46
10'	0.28	0.27	1.09	8'	0.39	0.10	1.50	10'	1.43	R	1.43
10½'	0.21	0.10	0.91	8½'	0.21	R	1.45	11'	1.21	R	1.13
								11½'	1.03	R	0.74

APPENDIX 3b (Sheet 13)

DISCHARGE VOLTAGES OF DISCARDED BATTERIES CYCLE 2

Battery		17			18			19		
Cell	1 U	2 T	3 U	1 T	2 U	3 T	1 U	2 T	3 U
100 AMPERES									
Time				Time			Time		
11'	0.99	0.96	1.40	9'	1.04	0.90	1.67	12'	1.33	R	1.25
12'	1.04	0.92	1.42	10'	1.06	0.88	1.67	13'	1.24	R	1.18
13'	0.93	0.67	1.30	11'	0.99	0.80	1.66	14'	1.13	R	0.80
14'	0.83	0.36	1.15	12'	0.94	0.75	1.65	15'	0.98	R	0.48
15'	0.68	R	0.50	13'	0.85	0.65	1.63	15½'	0.63	R	0.08
15½'	0.62	R	0.18	14'	0.77	0.57	1.61				
				15'	0.69	0.47	1.59				
				16'	0.58	0.32	1.55				
				17'	0.52	0.17	1.51				
				18'	0.38	R	1.42				
				19'	0.31	R	1.29				
				20'	0.21	R	1.19				
				21'	0.14	R	1.04				
				22'	0.02	R	0.91				
50 AMPERES											
16'	1.16	0.66	1.13	22½'	0.74	0.61	1.31	16'	1.15	0.37	0.79
17'	1.17	0.57	1.14	23'	0.79	0.69	1.35	17'	1.26	0.49	0.86
18'	1.17	0.59	1.12	24'	0.78	0.70	1.37	18'	1.23	0.49	0.65
19'	1.16	0.58	1.06	25'	0.73	0.70	1.37	19'	1.17	0.46	0.42
20'	1.11	0.54	0.85	26'	0.65	0.66	1.31	20'	0.97	0.47	0.30
21'	0.99	0.44	0.59	27'	0.59	0.62	1.26	21'	0.77	0.48	0.19
22'	0.90	0.44	0.45	28'	0.47	0.53	1.19	22'	0.46	0.39	R
23'	0.74	0.35	0.25	29'	0.39	0.47	1.13	23'	0.28	0.37	R
24'	0.58	0.37	0.14	30'	0.35	0.48	1.09	24'	0.18	0.40	R
25'	0.41	0.37	0.06	31'	0.26	0.41	1.02				
26'	0.21	0.28	R	32'	0.21	0.37	0.96				
				33'	0.17	0.28	0.85				
				34'	0.05	0.16	0.73				
				35'	0.07	0.14	0.67				
				36'	0.07	0.13	0.62				
				37'	0.07	0.06	0.49				
				38'	0.07	0.02	0.37				
				39'	0.10	0.00	0.24				

STAND DISCHARGES OF DISCARDED BATTERIES

Battery	10			12			13		
Cell	1 T	2 U	3 T	1 U	2 T	3 U	1 T	2 U	3 T
300 AMPERES									
Time				Time			Time		
3/22/52									
OCV	1.95	1.95	1.95		1.97	1.98	1.95	1.99	2.02	2.01
5"	1.27	0.70	0.92	5"	1.46	1.33	1.41	5"	1.48	1.43	1.46
30"	1.12	0.12	0.65	30"	1.42	1.25	1.30	30"	1.35	1.31	1.38
				1'	1.34	1.08	0.93	1'	1.03	1.11	1.30
200 AMPERES									
1'	1.18	0.07	0.63	1½'	1.27	0.10	0.60	NO DISCHARGE		
100 AMPERES									
1½'	1.10	0.45	1.00	2'	1.56	R	1.05	1½'	R	1.54	1.66
2'	1.34	0.30	0.90	2½'	1.58	R	0.90	2'	R	1.51	1.65
3'	1.02	R*	0.44	3'	1.55	R	0.45	3'	R	1.37	1.60
3½'	0.77	R	R	3½'	1.48	R	0.10	4'	R	1.07	1.51
								5'	R	0.05	1.24
50 AMPERES									
4'	1.06	0.18	0.75	4'	1.61	R	0.60	5½'	R	0.44	1.35
5'	0.91	R	0.52	5'	1.61	R	0.50	6'	R	0.12	1.26
6'	0.72	R	0.25	6'	1.54	R	0.32	6½'	R	R	1.10
				7'	1.38	R	0.07				
				8'	1.13	R	R				

*REVERSED

" = SECONDS
' = MINUTES

APPENDIX 3b (Sheet 15)

STAND DISCHARGES OF DISCARDED BATTERIES

Battery	17				18				19		
Cell	1 U	2 T	3 U		1 T	2 U	3 T		1 U	2 T	3 U
300 AMPERES											
Time 3/22/52				Time				Time			
OCV	1.98	1.97	1.96		1.95	1.95	1.96		1.97	1.98	1.97
5"	1.30	1.31	1.40	5"	0.80	0.75	1.30	5"	1.51	1.40	1.46
30"	1.04	1.15	1.26					30"	1.37	1.24	1.36
1'	0.50	0.80	1.00					1'	1.27	0.85	1.22
200 AMPERES											
1½'	0.54	0.92	1.12	30"	0.52	0.13	1.38	1½'	1.38	R*	1.37
2'	0.02	0.48	0.75					2'	1.20	R	1.05
100 AMPERES											
2½'	0.62	0.93	1.22	1'	0.90	0.38	1.57	2½'	1.40	R	1.27
3'	0.42	0.70	1.08	2'	0.42	R	1.51	3'	1.31	R	1.08
4'	R	0.15	0.58	2½'	0.13	R	1.46	3'45"	0.93	R	0.50
50 AMPERES											
4½'	0.44	0.64	1.05	3'	0.76	R	1.62	4'	1.12	R	0.78
5'	0.27	0.48	0.92	4'	0.68	R	1.60	5'	1.10	R	0.70
6'	R	0.02	0.54	5'	0.42	R	1.55	6'	0.80	R	0.42
				6'	0.13	R	1.48	6½'	0.66	R	0.32

* REVERSED

" = SECONDS
' = MINUTES

APPENDIX 3b (Sheet 16)

VOLTAGES OF DISCARDED BATTERIES ON CHARGE CYCLE 3

Battery		10			12			13		
Cell		1 T	2 U	3 T	1 U	2 T	3 U	1 T	2 U	3 T
Time	Rate									
3/22/52										
2:45 PM	OCV	1.92	1.92	1.93	1.94	1.95	1.91	1.97	2.00	2.00
2:50 PM	3	START CHARGE								
2:50 PM	3	1.95	1.97	1.96	1.97	1.98	1.94	2.00	2.02	2.02
3/23/52										
4:30 PM	3	2.21	2.22	2.22	2.26	2.29	2.25	2.35	2.34	2.33
3/24/52										
8:15 AM	3	2.31	2.31	2.32	2.33	2.35	2.32	2.35	2.35	2.35
8:45 AM	5	CHANGE RATE								
9:45 AM	5	2.36	2.37	2.36	2.38	2.40	2.37	2.40	2.40	2.39
10:00 AM	10	CHANGE RATE								
11:00 AM	10	2.41	2.41	2.42	2.42	2.44	2.41	2.45	2.45	2.44
11:20 AM	15	CHANGE RATE								
12:40 PM	15	2.41	2.41	2.42	2.43	2.44	2.41	2.44	2.43	2.44
1:00 PM	20	CHANGE RATE								
1:00 PM	20	2.42	2.43	2.44	2.45	2.46	2.43	2.48	2.46	2.46
3/25/52										
1:00 PM	20	2.40	2.40	2.46	2.41	2.41	2.40	2.41	2.39	2.41
3/26/52										
9:00 AM	20	2.40	2.40	2.42	2.42	2.42	2.40	2.42	2.40	2.43
8:00 PM	20	2.41	2.41	2.42	2.42	2.43	2.40	2.42	2.40	2.42
11:30 PM	20	2.40	2.40	2.42	2.42	2.43	2.40	2.41	2.40	2.42
3/27/52										
9:00 AM	20	2.41	2.41	2.42	2.42	2.43	2.40	2.41	2.40	2.43
4:45 PM	20	2.38	2.39	2.41	2.40	2.41	2.38	2.40	2.38	2.42
3/28/52										
2:30 AM	20	2.43	2.43	2.44	2.44	2.46	2.41	2.43	2.41	2.46
9:00 AM	20	2.43	2.43	2.45	2.44	2.46	2.42	2.43	2.41	2.46
4:30 PM	20	2.42	2.43	2.45	2.44	2.46	2.42	2.43	2.40	2.46
8:30 PM	20	2.41	2.41	2.44	2.42	2.45	2.40	2.41	2.39	2.45
3/29/52										
9:30 AM	20	2.43	2.44	2.45	2.44	2.47	2.42	2.42	2.40	2.42
3/30/52										
10:00 AM	20	2.41	2.42	2.47	2.41	2.46	2.39	2.40	2.37	2.46
3/31/52										
1:00 PM	20	2.43	2.43	2.46	2.41	2.49	2.40	2.39	2.35	2.48

APPENDIX 3b (Sheet 17)

VOLTAGES OF DISCARDED BATTERIES ON CHARGE CYCLE 3

Battery		17			18			19		
Cell		1 U	2 T	3 U	1 T	2 U	3 T	1 U	2 T	3 U
Time	Rate									
3/22/52										
2:45 PM	OCV	1.95	1.95	1.93	1.94	1.93	1.94	1.94	1.95	1.94
2:50 PM	3	START CHARGE								
2:50 PM	3	1.99	1.98	1.96	1.98	1.99	1.98	1.98	1.98	1.97
3/23/52										
4:30 PM	3	2.29	2.29	2.31	2.24	2.23	2.24	2.26	2.27	2.27
3/24/52										
8:15 AM	3	2.34	2.34	2.34	2.33	2.32	2.34	2.33	2.34	2.33
8:45 AM	5	CHANGE RATE								
9:45 AM	5	2.38.	2.38	2.38	2.38	2.37	2.38	2.38	2.39	2.38
10:00 AM	10	CHANGE RATE								
11:00 AM	10	2.43	2.42	2.43	2.43	2.42	2.42	2.42	2.43	2.42
11:20 AM	15	CHANGE RATE								
12:40 PM	15	2.43	2.43	2.43	2.44	2.42	2.43	2.42	2.43	2.42
1:00 PM	20	CHANGE RATE								
1:00 PM	20	2.46	2.45	2.45	2.46	2.45	2.45	2.44	2.46	2.44
3/25/52										
1:00 PM	20	2.41	2.39	2.39	2.41	2.39	2.39	2.39	2.39	2.38
3/26/52										
9:00 AM	20	2.41	2.40	2.41	2.42	2.40	2.40	2.41	2.41	2.40
8:00 PM	20	2.42	2.40	2.40	2.41	2.39	2.40	2.40	2.40	2.38
11:30 PM	20	2.42	2.40	2.40	2.41	2.40	2.40	2.40	2.40	2.38
3/27/52										
9:00 AM	20	2.41	2.40	2.41	2.41	2.41	2.40	2.39	2.39	2.37
4:45 PM	20	2.40	2.38	2.40	2.41	2.41	2.40	2.39	2.39	2.36
3/28/52										
2:30 AM	20	2.44	2.42	2.42	2.43	2.42	2.42	2.42	2.41	2.38
9:00 AM	20	2.44	2.42	2.42	2.41	2.41	2.42	2.42	2.40	2.38
4:30 PM	20	2.44	2.42	2.42	2.42	2.41	2.42	2.42	2.41	2.37
8:30 PM	20	2.42	2.40	2.40	2.41	2.40	2.40	2.41	2.40	2.35
3/29/52										
9:30 AM	20	2.43	2.41	2.41	2.42	2.40	2.41	2.42	2.41	2.41
3/30/52										
10:00 AM	20	2.42	2.40	2.40	2.42	2.39	2.41	2.40	2.40	2.40
3/31/52										
1:00 PM	20	2.43	2.43	2.41	2.40	2.38	2.40	2.42	2.41	2.42

APPENDIX 3b (Sheet 18)

SPECIFIC GRAVITY OF DISCARDED BATTERIES DURING CHARGE CYCLE 3

Battery		10			12				
Cell		1 T	2 U	3 T	1 U	2 T	3 U	1 T	2 U	3
Time	Rate									
3/22/52										
2:45 PM	0	1.090	1.085	1.095	1.100	---	1.070	---	1.135	1.155
3/23/52										
4:30 PM	3	1.235	1.220	1.235	1.225	1.250	1.220	1.245	1.270	1.265
3/24/52										
8:15 AM	3	1.260	1.260	1.260	1.260	1.275	1.255	1.260	1.275	1.280
9:45 AM	5	1.265	1.255	1.265	1.265	1.275	1.250	1.265	1.275	1.280
11:00 AM	10	1.265	1.260	1.265	1.260	1.280	1.250	1.265	1.275	1.285
12:40 PM	15	1.270	1.260	1.265	1.260	1.275	1.245	1.260	1.275	1.280
1:00 PM	20	1.270	1.260	1.265	1.260	1.275	1.245	1.260	1.275	1.280
3/25/52										
1:00 PM	20*	1.290	1.280	---	1.280	1.290	---	1.295	---	1.295
3/26/52										
9:00 AM	20	1.300	1.285	1.305	1.280	1.305	1.265	1.300	1.300	1.310
8:00 PM	20*	1.295	1.285	1.295	1.280	---	1.265	1.320	---	---
11:30 PM	20*	1.265	1.265	1.275	1.255	1.270	1.230	1.290	1.275	1.285
3/27/52										
8:45 AM	20*	1.280	1.280	1.280	1.265	1.280	1.240	1.300	1.285	1.300
4:45 PM	20*	1.290	1.290	1.290	1.270	1.300	1.255	1.310	1.315	1.315
3/28/52										
8:30 AM	20	1.275	1.275	1.280	1.255	1.280	1.240	1.295	1.280	1.295
9:00 AM	20	1.275	1.275	1.275	1.265	1.275	1.250	1.295	1.285	1.300
4:30 PM	20	1.290	1.280	1.285	1.270	1.290	1.255	1.305	1.305	1.315
8:30 PM	20*	1.300	1.295	1.295	1.275	1.295	1.260	1.310	1.315	1.320
3/29/52										
9:30 AM	20	1.290	1.285	1.285	1.270	1.290	1.245	1.305	1.295	1.315
3/30/52										
10:00 AM	20*	LEVELS TOO LOW FOR SPECIFIC GRAVITY READINGS								
3/31/52										
1:00 PM	20	1.280	1.285	1.275	1.260	1.275	1.250	1.275	1.260	1.295

*All cells watered following these specific gravity readings.

APPENDIX 3b (Sheet 19)

SPECIFIC GRAVITY OF DISCARDED BATTERIES DURING CHARGE CYCLE 3

Battery		17			18			19		
Cell		1 U	2 T	3 U	1 T	2 U	3 T	1 U	2 T	3 U
Time	Rate									
3/22/52										
2:45 PM	0	1.100	1.100	1.085	1.105	1.070	1.115	1.080	---	1.085
3/23/52										
4:30 PM	3	1.230	1.235	1.220	1.240	1.225	1.220	1.190	1.230	1.200
3/24/52										
8:15 AM	3	1.260	1.260	1.250	1.270	1.255	1.265	1.245	1.260	1.235
9:45 AM	5	1.260	1.270	1.250	1.275	1.255	1.265	1.240	1.265	1.235
11:00 AM	10	1.260	1.265	1.245	1.275	1.260	1.265	1.235	1.260	1.240
12:40 PM	15	1.260	1.265	1.245	1.265	1.260	1.260	1.240	1.255	1.240
1:00 PM	20	1.260	1.265	1.245	1.265	1.260	1.260	1.240	1.255	1.240
3/25/52										
1:00 PM	20*	1.275	1.270	1.250	---	1.280	1.275	---	1.280	1.260
3/26/52										
9:00 AM	20	1.290	1.280	---	1.305	---	1.285	1.260	1.280	---
8:00 PM	20*	---	---	---	---	---	---	---	---	---
11:30 PM	20*	1.260	1.260	1.240	1.270	1.255	1.265	1.225	1.265	1.250
3/27/52										
8:45 AM	20*	1.260	1.265	1.255	1.275	1.270	1.265	1.235	1.260	1.250
4:45 PM	20*	1.280	1.285	1.265	1.290	1.290	1.280	1.260	1.285	1.275
3/28/52										
2:30 AM	20	1.260	1.265	1.250	1.270	1.265	1.260	1.230	1.260	1.250
9:00 AM	20	1.270	1.265	1.250	1.285	1.275	1.260	1.225	1.265	1.250
4:30 PM	20	1.285	1.280	1.270	1.295	1.290	1.280	1.245	1.270	1.260
8:30 PM	20*	1.290	1.285	1.275	1.285	1.295	1.285	1.250	1.270	1.265
3/29/52										
9:30 AM	20	1.280	1.275	1.265	1.290	1.290	1.280	1.240	1.270	1.260
3/30/52										
10:00 AM	20*	LEVELS TOO LOW FOR SPECIFIC GRAVITY READINGS								
3/31/52										
1:00 PM	20	1.260	1.265	1.265	1.260	1.255	1.260	1.225	1.250	1.270

*All cells watered following these specific gravity readings.

APPENDIX 3b (Sheet 20)

DISCHARGE VOLTAGES OF DISCARDED BATTERIES CYCLE 3

Battery	10			12			13		
Cell	1 T	2 U	3 T	1 U	2 T	3 U	1 T	2 U	3 T
300 AMPERES									
Time 3/31/52				Time			Time		
OCV	2.12	2.10	2.11	2.08	2.10	2.08	2.10	2.08	2.12
5"	1.61	1.26	1.41	5" 1.62	0.94	1.65	5" 1.44	1.18	0.86
30"	1.52	0.70	1.18	30" 1.58	R	1.68			
1'	1.49	R	0.92						
200 AMPERES									
1½'	1.62	R	0.54	1' 1.69	R	1.76	30" 1.46	1.00	0.04
				1½' 1.67	R	1.76			
				2' 1.66	R	1.70			
100 AMPERES									
2'	1.78	R	0.88	2½' 1.82	R	1.88	1' 1.66	1.08	R
3'	1.76	R	0.64	3' 1.82	R	1.88	2' 1.59	0.61	R
4'	1.74	R	R	3½' 1.81	R	1.86	3' 1.54	R	R
5'	1.72	R	R	4' 1.80	R	1.86			
				5' 1.78	R	1.85			
				6' 1.78	R	1.84			
				7' 1.77	R	1.84			
				8' 1.75	R	1.83			
				9' 1.74	R	1.83			
				10' 1.73	R	1.82			
				11' 1.71	R	1.82			
				12' 1.70	R	1.81			
				13' 1.67	R	1.80			
				14' 1.66	R	1.80	BATTERY 12 (Cont'd)		
				15' 1.64	R	1.78			
				16' 1.62	R	1.78	24' 1.36	R	1.71
				17' 1.59	R	1.77	25' 1.31	R	1.68
				18' 1.56	R	1.76	26' 1.27	R	1.68
				19' 1.53	R	1.75	27' 1.21	R	1.66
				20' 1.50	R	1.74	28' 1.16	R	1.65
				21' 1.47	R	1.74	29' 1.07	R	1.63
				22' 1.43	R	1.72	30' 0.98	R	1.62
				23' 1.40	R	1.72	31' 0.91	R	1.60

(See next column)

APPENDIX 3b (Sheet 21)

DISCHARGE VOLTAGES OF DISCARDED BATTERIES CYCLE 3

Battery	10			12			13		
Cell	1 T	2 U	3 T	1 U	2 T	3 U	1 T	2 U	3 T

50 AMPERES

Time 3/31/52				Time				Time			
5½'	1.84	R	0.50	32'	1.36	R	1.72	3½'	1.68	0.74	0.20
6'	1.85	R	0.48	33'	1.36	R	1.72	4'	1.64	0.60	0.10
7'	1.85	R	0.44	34'	1.35	R	1.71	5'	1.63	0.44	R
8'	1.85	R	0.32	35'	1.34	R	1.71	6'	1.57	0.21	R
9'	1.85	R	0.18	36'	1.32	R	1.70	7'	1.54	R	R
10'	1.84	R	0.03	37'	1.31	R	1.70	8'	1.41	R	R
11'	1.84	R	R	38'	1.28	R	1.70	9'	1.32	R	R
12'	1.83	R	R	39'	1.25	R	1.68	10'	1.18	R	R
13'	1.82	R	R	40'	1.22	R	1.67				
14'	1.81	R	R	41'	1.19	R	1.66				
15'	1.80	R	R	42'	1.17	R	1.66				
16'	1.78	R	R	43'	1.14	R	1.65				
17'	1.77	R	R	44'	1.09	R	1.64				
18'	1.75	R	R	45'	1.06	R	1.63				
19'	1.73	R	R	46'	1.02	R	1.62				
20'	1.71	R	R	47	0.98	R	1.61				
21'	1.70	R	R	48'	0.94	R	1.60				
22'	1.70	R	R	49'	0.82	R	1.56				
23'	1.69	R	R	50'	0.75	R	1.54				
24'	1.67	R	R	51'	0.68	R	1.52				
25'	1.66	R	R	52'	0.60	R	1.48				
26'	1.64	R	R	53'	0.46	R	1.43				
27'	1.62	R	R	54'	0.34	R	1.36				
28'	1.60	R	R	55'	0.22	R	1.32				
29'	1.58	R	R								

APPENDIX 3b (Sheet 22)

DISCHARGE VOLTAGES FOR DISCARDED BATTERIES CYCLE 3

Battery	17			18			19		
Cell	1 U	2 T	3 U	1 T	2 U	3 T	1 U	2 T	3 U
				300 AMPERES					
Time 3/31/52				Time			Time		
OCV	2.09	2.09	2.08		2.08	2.08	2.09		2.06	2.08	2.10
5"	1.20	1.16	1.58	5"	1.20	1.32	1.44	5"	1.52	1.46	1.57
30"	0.30	0.45	1.54	30"	R	0.10	1.34	30"	1.42	1.30	1.50
								1'	1.32	1.12	1.44
								1½'	1.22	0.83	1.39
								2'	1.10	0.24	1.34
								2½'	0.98	R	1.31
				200 AMPERES					
1'	R	0.62	1.67	1'	R	0.25	1.50	3'	1.12	R	1.44
								3½'	1.02	R	1.40
								4'	0.86	R	1.35
				100 AMPERES					
1½'	R	0.88	1.82	2'	R	0.28	1.66	4½'	1.36	0.20	1.62
2'	R	0.74	1.82	3'	R	R	1.62	5'	1.35	0.15	1.62
3'	R	0.30	1.80	4'	R	R	1.61	6'	1.30	R	1.60
4'	R	R	1.80					7'	1.20	R	1.56
5'	R	R	1.80					8'	1.06	R	1.52
								9'	0.90	R	1.46
								10'	0.72	R	1.40
								11'	0.52	R	1.33
								12'	0.34	R	1.28
								13'	0.26	R	1.22

APPENDIX 3b (Sheet 23)

DISCHARGE VOLTAGES FOR DISCARDED BATTERIES CYCLE 3

Battery	17			18			19		
Cell	1 U	2 T	3 U	1 T	2 U	3 T	1 U	2 T	3 U
				50 AMPERES					
Time 3/31/52				Time			Time		
5½'	0.02	0.34	1.90	5'	0.00	0.16	1.76	14'	0.96	R	1.50
6'	R	0.44	1.89	6'	R	0.10	1.77	15'	1.00	R	1.52
7'	R	0.31	1.88	7'	R	R	1.75	16'	0.99	R	1.52
8'	R	0.18	1.88	8'	R	R	1.74	17'	0.95	R	1.51
9'	R	0.04	1.88	9'	R	R	1.70	18'	0.89	R	1.48
10'	R	R	1.88	10'	R	R	1.69	19'	0.81	R	1.46
11'	R	R	1.88	11'	R	R	1.68	20'	0.73	R	1.44
12'	R	R	1.89	12'	R	R	1.66	21'	0.65	R	1.42
13'	R	R	1.89	13'	R	R	1.64	22'	0.62	R	1.37
14'	R	R	1.89	14'	R	R	1.62	23'	0.49	R	1.36
15'	R	R	1.89	15'	R	R	1.60	24'	0.40	R	1.32
16'	R	R	1.89	16'	R	R	1.57	25'	0.38	R	1.31
17'	R	R	1.89	17'	R	R	1.52	26'	0.36	R	1.30
18'	R	R	1.89	18'	R	R	1.47	27'	0.34	R	1.29
19'	R	R	1.85	19'	R	R	1.43	28'	0.22	R	1.23
20'	R	R	1.84	20'	R	R	1.37	29'	0.11	R	1.15
21'	R	R	1.84	21'	R	R	1.33	30'	R	R	1.05
22'	R	R	1.83	22'	R	R	1.31	31'	R	R	1.00
23'	R	R	1.83					32'	R	R	0.99
24'	R	R	1.82								
25'	R	R	1.82								
26'	R	R	1.81								
27'	R	R	1.80								
28'	R	R	1.80								
29'	R	R	1.80								
30'	R	R	1.79								
31'	R	R	1.78								
32'	R	R	1.77								
33'	R	R	1.77								
34'	R	R	1.76								
35'	R	R	1.75								
36'	R	R	1.74								
37'	R	R	1.73								
38'	R	R	1.72								

APPENDIX 3c

Voltages on Pre-test Charge
for 6 Discarded Batteries

Battery No.	31			32			33		
Time									
5:30 PM (OCV)	1.97	2.01	2.02	1.38	1.37	1.35	0.15	0.12	1.79
5:45	(on charge at 5 amperes)								
5:48	2.07	2.13	2.15	1.84	1.88	1.81	1.99	1.95	2.13
7:45	2.15	2.27	2.29	2.06	2.06	2.07	2.05	2.04	2.08
9:45	2.25	2.32	2.32	2.20	2.20	2.20	2.12	2.08	2.08
11:30	(charging stopped overnight)								
8:30 AM (OCV)	2.02	2.05	2.06	1.92	1.92	1.91	1.94	1.81	1.32
8:45	2.12	2.16	2.17	1.98	1.98	1.98	2.02	1.96	2.18
10:45	2.30	2.33	2.33	2.22	2.22	2.22	2.21	2.08	2.08
[illegible]:00	(water added to each cell)								
4:00 PM	2.30	2.33	2.34	2.22	2.22	2.22	2.23	2.20	2.10
8:45	2.30	2.36	2.37	2.23	2.23	2.23	2.24	2.20	2.11
10:45	2.32	2.37	2.38	2.23	2.23	2.23	2.24	2.21	2.12
11:45	2.32	2.37	2.38	2.23	2.23	2.23	2.24	2.21	2.12
11:50	(charging stopped overnight)								
9:05 AM	(on charge again at 5 amperes)								
10:20	2.35	2.40	2.42	2.25	2.25	2.25	2.25	2.22	2.08
11:40	2.34	2.40	2.42	2.24	2.25	2.25	2.25	2.22	2.09
1:20 PM	2.35	2.40	2.42	2.24	2.25	2.24	2.25	2.22	2.10
2:20	2.35	2.40	2.42	2.24	2.25	2.24	2.25	2.22	2.11
2:25	(off charge)								

APPENDIX 3c (Sheet 2)

Voltages on Pre-test Charge
(Cont'd) for 6 Discarded Batteries

Battery No.	34			35			36		
Time									
5:30 PM (OCV)	1.91	1.93	1.89	1.99	2.01	2.01	1.95	1.94	1.95
5:45	(on charge at 5 amperes)								
5:48	2.16	2.07	2.09	2.13	2.16	2.16	2.09	2.09	2.09
7:45	2.27	2.25	2.12	2.26	2.28	2.27	2.19	2.19	2.19
9:45	2.30	2.27	2.19	2.27	2.28	2.28	2.24	2.24	2.24
11:30	(charging stopped overnight)								
8:30 AM (OCV)	1.96	1.98	1.95	2.02	2.05	2.04	2.01	2.01	2.01
8:45	2.14	2.08	2.08	2.12	2.14	2.15	2.15	2.15	2.15
10:45	2.32	2.28	2.26	2.28	2.30	2.30	2.26	2.26	2.26
11:00	(water added to each cell)								
4:30 PM	2.33	2.27	2.28	2.29	2.30	2.32	2.26	2.26	2.26
8:45	2.34	2.28	2.30	2.29	2.35	2.35	2.26	2.26	2.27
10:45	2.34	2.28	2.30	2.32	2.36	2.36	2.27	2.27	2.28
11:45	2.34	2.28	2.30	2.32	2.36	2.36	2.27	2.27	2.28
11:50	(charging stopped overnight)								
9:05 AM	(on charge again at 5 amperes)								
10:20	2.35	2.31	2.31	2.37	2.39	2.38	2.29	2.28	2.29
11:40	2.36	2.31	2.32	2.35	2.39	2.39	2.28	2.29	2.29
1:20 PM	2.35	2.31	2.32	2.35	2.39	2.39	2.29	2.29	2.29
2:20	2.35	2.31	2.32	2.35	2.39	2.39	2.29	2.29	2.29
2:25	(off charge)								

APPENDIX 3c (Sheet 3)

Specific Gravities During Pre-Test Charge
for 6 Discarded Batteries

Battery No.	31			32			33		
Time*									
4/18/52									
5:30 PM	1.150	1.200	1.195	**	**	**	1.045[a]	1.030[a]	1.030[a]
7:45	1.155	1.200	1.210	1.045	1.065	1.060	1.060	1.060	1.060
9:45	1.170	1.225	1.220	1.085	1.070	1.080	1.100	1.065	1.065
10:45 AM	1.200	1.230	1.235	1.095	1.095	1.095	1.095	1.040	1.050
6:45 PM	1.200	1.240	1.235	1.120	1.115	1.125	1.120	1.110	1.105
8:45	1.210	1.240	1.245	1.130	1.120	1.125	1.130	1.115	1.115
10:45	1.215	1.245	1.245	1.135	1.130	1.135	1.135	1.125	1.125
11:45	1.215	1.245	1.245	1.135	1.130	1.140	1.135	1.130	1.135
4/21/52									
10:20 AM	1.235	1.250	1.255	1.150	1.145	1.145	1.150	1.135	1.130
11:40	1.235	1.260	1.260	1.150	1.150	1.150	1.155	1.135	1.135
1:20 PM	1.235	1.260	1.260	1.150	1.150	1.150	1.155	1.140	1.140
2:20	1.235	1.260	1.260	1.150	1.150	1.150	1.155	1.140	1.140

** All cells were dry; approximately 470 ml H_2O added

[a] - Water added

APPENDIX 3c (Sheet 4)

(Cont'd) Specific Gravities During Pre-Test Charge for 6 Discarded Batteries

Battery No.	34			35			36		
Time*									
4/18/52									
5:30 PM	1.090	1.100	1.075	1.135	1.190	1.180	d	d	d
7:45	1.100	1.105	1.080	1.175	1.195	1.195	1.060	1.040	1.070
9:45	1.120	1.125	1.100	1.185	1.210	1.200	1.100	1.125	1.100
10:45 AM	1.130	1.140	1.120	1.200	1.220	1.220	1.140	1.135	1.150
6:45 PM	1.145	1.150	1.145	1.210	1.235	1.225	1.175	1.165	1.180
8:45	1.150	1.155	1.150	1.220	1.240	1.230	1.190	1.175	1.190
10:45	1.155	1.155	1.155	1.225	1.240	1.235	1.190	1.185	1.195
11:45	1.165	1.160	1.165	1.225	1.245	1.240	1.190	1.185	1.195
4/21/52									
10:20 AM	1.165	1.175	1.165	1.240	1.250	1.250	1.200	1.200	1.200
11:40	1.170	1.180	1.170	1.240	1.250	1.250	1.205	1.205	1.210
1:20 PM	1.170	1.180	1.175	1.240	1.250	1.250	1.210	1.210	1.210
2:20	1.170	1.180	1.175	1.240	1.250	1.250	1.210	1.210	1.210

d - Water added

APPENDIX 3c (Sheet 5)

Pre-test Discharge at 300 amps [illegible] Voltages

Battery No.	31			32			33		
Sec/CCV									
0	2.12	2.14	2.14	2.08	2.09	2.09	2.05	1.98	1.97
5	1.68	1.63	1.59	1.44	1.42	1.45	1.40	1.48	0.88
30	1.67	1.68	1.62	1.42	1.40	1.43	1.40	1.45	0.00
60	1.65	1.66	1.60	1.38	1.36	1.41	1.39	1.41	R*
90	1.62	1.64	1.59	1.34	1.32	1.37	1.42	1.41	R
				Recoveries : Voltages					
30	2.04	2.04	2.04	1.92	1.93	1.93	1.96	1.93	1.69
60	2.05	2.06	2.06	1.94	1.95	1.94	1.97	1.94	1.84
90	2.05	2.06	2.06	1.95	1.96	1.95	1.98	1.95	1.86
120	2.06	2.07	2.07	1.96	1.96	1.96	1.98	1.95	1.89
150	2.06	2.07	2.07	1.96	1.96	1.96	1.98	1.95	1.90
180	2.06	2.07	2.07	1.96	1.97	1.96	1.99	1.96	1.91
210	2.06	2.07	2.07	1.96	1.98	1.96	1.99	1.96	1.91
Sp.Gr.**	1.235	1.245	1.245	1.150	1.150	1.145	1.160	1.140	1.125

* REVERSED

** 20 minutes after pre-test discharge.

APPENDIX 3c (Sheet 6)

Pre-test Discharge at 300 Amperes: Voltages
(Cont'd)

Battery No.	34			35			36		
Sec/OCV									
0	1.12	2.06	2.02	2.13	2.13	2.13	2.11	2.11	2.11
5	0.40	1.26	0.98	1.64	1.67	1.67	1.67	1.63	1.61
30	0.05	1.33	1.02	1.63	1.66	1.66	1.67	1.64	1.64
60	R*	1.42	1.16	1.62	1.65	1.65	1.67	1.64	1.64
90	R	1.50	1.10	1.60	1.64	1.64	1.66	1.62	1.62
				RECOVERIES: VOLTAGES					
30	1.96	1.48	1.56	2.02	2.03	2.03	2.01	2.01	2.01
60	1.98	1.63	1.94	2.03	2.04	2.04	2.02	2.02	2.02
90	1.98	1.80	1.96	2.04	2.05	2.05	2.03	2.03	2.03
120	2.00	1.87	1.96	2.04	2.05	2.05	2.03	2.04	2.04
150	2.00	1.90	1.98	2.04	2.05	2.05	2.04	2.04	2.04
180	2.00	1.91	1.98	2.05	2.06	2.06	2.04	2.04	2.04
210	2.01	1.92	1.98	2.05	2.06	2.06	2.04	2.04	2.04
Sp.Gr.**	1.150	1.180	1.165	1.225	1.235	1.245	1.205	1.205	1.205

* REVERSED

** 20 minutes after pre-test discharge.

APPENDIX 3c (Sheet 7)

Charge voltages of discarded batteries - cycle 1

Battery No.		31			32			33		
Time	Rate	T	U	T	U	T	U	T	U	T
4/22/52										
5:40 PM(OCV)	0	2.07	2.09	2.09	1.98	1.99	1.98	2.00	1.97	1.92
5:45	5	2.18	2.22	2.22	2.09	2.10	2.09	2.10	2.06	2.06
6:45	5	2.33	2.36	2.37	2.23	2.24	2.23	2.25	2.15	2.07
8:45	5	2.36	2.40	2.41	2.25	2.25	2.24	2.26	2.21	2.10
9:45	5	2.36	2.40	2.41	2.25	2.25	2.24	2.26	2.21	2.10
10:45	5	2.38	2.41	2.41	2.25	2.26	2.25	2.27	2.22	2.11
11:45	5	2.38	2.41	2.41	2.26	2.26	2.25	2.27	2.22	2.12
				(Charging stopped overnight)						
4/23/52										
10:15 AM	5	2.36	2.37	2.37	2.26	2.26	2.26	2.26	2.21	2.06
11:15	5	2.39	2.43	2.44	2.25	2.26	2.25	2.27	2.20	2.07
12:00	5	2.39	2.43	2.43	2.25	2.26	2.26	2.27	2.20	2.07

Battery No.		34			35			36		
Time	Rate	U	T	U	T	U	T	U	T	U
4/22/52										
5:40 PM(OCV)	0	2.01	2.03	2.01	2.06	2.07	2.07	2.05	2.05	2.05
5:45	5	2.21	2.14	2.14	2.18	2.18	2.18	2.14	2.14	2.14
6:45	5	2.36	2.30	2.31	2.31	2.31	2.31	2.29	2.28	2.29
8:45	5	2.36	2.31	2.32	2.36	2.38	2.38	2.30	2.29	2.30
9:45	5	2.36	2.31	2.32	2.36	2.38	2.38	2.30	2.30	2.30
10:45	5	2.36	2.31	2.33	2.36	2.38	2.38	2.30	2.30	2.30
11:45	5	2.37	2.32	2.33	2.36	2.38	2.38	2.30	2.30	2.30
				(Charging stopped overnight)						
4/23/52										
10:15 AM	5	2.33	2.33	2.32	2.32	2.33	2.32	2.33	2.33	2.34
11:15	5	2.36	2.33	2.33	2.36	2.39	2.39	2.32	2.33	2.33
12:00	5	2.36	2.33	2.33	2.37	2.40	2.40	2.32	2.33	2.33

T - Treated
U - Untreated

APPENDIX 3c (Sheet 8)

SPECIFIC GRAVITIES FOR DISCARDED BATTERIES DURING CHARGE CYCLE 1

Battery	31			32			33		
Cell	1 T	2 U	3 T	1 U	2 T	3 U	1 T	2 U	[illegible]
Time									
4/22/52									
5:40 PM	1.240	1.245	1.250	1.150	1.145	1.150	1.150	1.135	1.1
6:45 PM	1.240	1.260	1.260	1.150	1.145	1.150	1.150	1.135	1.1
8:45 PM	1.240	1.260	1.260	1.150	1.150	1.150	1.150	1.135	1.1
9:45 PM	1.240	1.265	1.260	1.160	1.150	1.150	1.160	1.140	1.1
10:45 PM	1.240	1.265	1.260	1.160	1.155	1.155	1.160	1.140	1.1
11:45 PM	1.245	1.270	1.265	1.160	1.165	1.155	1.165	1.145	1.1
4/23/52									
10:15 AM	1.255	1.265	1.270	1.160	1.170	1.165	1.185	1.140	1.1
11:15 AM	1.260	1.270	1.270	1.170	1.175	1.165	1.185	1.140	1.1
12:00 N	1.260	1.265	1.270	1.170	1.175	1.170	1.185	1.140	1.1

Battery	34			35			36		
Cell	1 U	2 T	3 U	1 T	2 U	3 T	1 U	2 T	3 U
4/22/52									
5:40 PM	1.170	1.170	1.175	1.225	1.240	1.230	1.200	1.195	1.2
6:45 PM	1.170	1.175	1.175	1.230	1.250	1.245	1.210	1.205	1.2
8:45 PM	1.170	1.180	1.175	1.235	1.250	1.250	1.210	1.205	1.2
9:45 PM	1.175	1.180	1.180	1.240	1.250	1.250	1.215	1.215	1.2
10:45 PM	1.175	1.185	1.180	1.240	1.255	1.250	1.215	1.215	1.2
11:45 PM	1.175	1.185	1.180	1.240	1.255	1.250	1.220	1.220	1.2
4/23/52									
10:15 AM	1.185	1.210	1.190	1.250	1.250	1.260	1.230	1.230	1.2
11:15 AM	1.185	1.210	1.195	1.255	1.255	1.260	1.230	1.230	1.2
12:00 N	1.185	1.210	1.190	1.260	1.255	1.265	1.230	1.235	1.2

APPENDIX 3c (Sheet 9)

DISCHARGE VOLTAGES FOR DISCARDED BATTERIES CYCLE 1

Battery	31			32			33	
Cell	1 T	2 U	3 T	1 U	2 T	3 U	1 T	2 U
300 AMPERES								
Time				Time			Time	
OCV	2.13	2.15	2.15		2.08	2.08	2.08		2.04	1.97
5"	1.68	1.69	1.69	5"	1.46	1.46	1.50	5"	1.05	1.20
30"	1.67	1.69	1.69	30"	1.44	1.42	1.47			
1'	1.63	1.66	1.66	1'	1.40	1.38	1.43			
2'	1.57	1.62	1.63	2'	1.30	1.27	1.34			
3'	1.51	1.58	1.61	3'	1.18	1.14	1.23			
4'	1.42	1.54	1.58	4'	0.88	0.92	0.96			
5'	1.18	1.47	1.53	4½'	0.56	0.76	0.66			
6'	0.20	1.34	1.46							
7'	R	0.92	1.40							
200 AMPERES								
7½'	R	1.06	1.52	5'	0.48	0.86	0.48	30"	1.44	1.56
8'	R	0.88	1.48							
8½'	R	0.68	1.44							
100 AMPERES								
9'	0.26	1.16	1.64	5½'	1.05	1.25	0.95	1'	1.72	1.72
10'	0.30	1.24	1.64	6'	1.03	1.24	1.83	2'	1.71	1.71
11'	1.27	1.18	1.64	7'	0.84	1.16	0.48	3'	1.68	1.66
12'	0.16	1.07	1.62	8'	0.44	1.10	R	3½'	1.68	1.64
13'	0.05	0.95	1.61					4'	1.67	1.64
14'	R	0.83	1.58							
15'	R	0.75	1.54							
16'	R	0.65	1.48							
17'	R	0.58	1.38							
18'	R	0.50	1.22							
19'	R	0.44	1.04							

*REVERSED

APPENDIX 3c (Sheet 10)

DISCHARGE VOLTAGES FOR DISCARDED BATTERIES CYCLE 1

Battery	31			32			33	
Cell	1	2	3	1	2	3	1	2
	T	U	T	U	T	U	T	U

50 AMPERES

Time				Time				Time		
19½'	0.00	0.82	1.36	8½'	1.02	1.34	0.40	4½'	1.80	1.74
20'	0.02	0.82	1.40	9'	1.02	1.36	0.18	5'	1.80	1.74
21'	0.06	0.82	1.40	10'	0.88	1.33	R	6'	1.80	1.74
22'	0.04	0.82	1.40	11'	0.68	1.26	R	7'	1.80	1.74
23'	R	0.80	1.38	12'	0.38	1.21	R	8'	1.79	1.72
24'	R	0.80	1.36	13'	0.00	1.18	R	9'	1.78	1.70
25'	R	0.77	1.32	14'	R	1.16	R	10'	1.78	1.69
26'	R	0.76	1.28					11'	1.78	1.67
27'	R	0.74	1.24					12'	1.76	1.64
28'	R	0.72	1.18					13'	1.76	1.58
29'	R	0.70	1.14					14'	1.76	1.48
30'	R	0.68	1.10					15'	1.74	1.28
31'	R	0.66	1.06							
32'	R	0.64	1.00							
33'	R	0.62	0.96							
34'	R	0.60	0.92							
35'	R	0.58	0.86							
36'	R	0.52	0.80							
37'	R	0.50	0.76							
38'	R	0.50	0.74							

APPENDIX 3c (Sheet 11)

DISCHARGE VOLTAGES FOR DISCARDED BATTERIES CYCLE 1

Battery	34			35			36	
Cell	1 U	2 T	3 U	1 T	2 U	3 T	1 U	2 T
300 AMPERES								
Time				Time			Time	
OCV	2.04	2.07	2.04		2.12	2.12	2.12		2.10	2.10	2
5"	0.60	1.24	1.14	5"	1.63	1.68	1.68	5"	1.66	1.64	1
30"*	R	1.30	1.10	30"	1.62	1.68	1.67	30"	1.68	1.64	1
				1'	1.59	1.66	1.65	1'	1.66	1.63	1
				2'	1.55	1.63	1.62	2'	1.65	1.62	1
				3'	1.51	1.61	1.59	3'	1.62	1.58	1
				4'	1.47	1.58	1.56	4'	1.60	1.56	1
				5'	1.40	1.54	1.51	5'	1.56	1.50	1
				6'	1.31	1.50	1.46	6'	1.50	1.42	1
				7'	1.16	1.44	1.38	7'	1.42	1.22	1
				8'	0.82	1.34	1.16	8'	1.04	R	1
				8½'	0.53	1.28	0.97				
200 AMPERES											
1'	R	1.42	1.08	9'	0.82	1.44	1.12	8½'	1.08	0.04	1
				10'	0.50	1.35	0.70	9'	0.60	R	1
				11'	0.12	1.20	0.10				
100 AMPERES											
1½'	R	1.64	1.42	11½'	0.98	1.58	1.06	9½'	1.40	1.14	1
2'	R	1.62	1.35	12'	1.04	1.60	1.10	10'	1.44	1.08	1
3'	R	1.60	1.20	13'	1.04	1.59	0.96	11'	1.38	0.56	1
4'	R	1.56	1.00	14'	0.94	1.58	0.76	12'	1.06	0.06	1
				15'	0.80	1.54	0.60	13'	0.32	R	1
				16'	0.70	1.50	0.50				
				17'	0.58	1.36	0.40				
				18'	0.47	1.24	0.33				
				19'	0.36	1.12	0.27				
				20'	0.28	0.84	0.23				
				21'	0.18	0.60	0.20				
				21½'	0.14	0.47	0.19				

*CURRENT 250 AMPS.

APPENDIX 3c (Sheet 1/2)

DISCHARGE VOLTAGES FOR DISCARDED BATTERIES CYCLE 1

Battery		34			35			36	
Cell	1 U	2 T	3 U	1 T	2 U	3 T	1 U	2 T
				50 AMPERES				
Time				Time			Time		
4½'	R	1.74	1.42	22'	0.88	1.18	0.94	13½'	1.22	0.80
5'	R	1.74	1.44	23'	1.00	1.30	1.04	14'	1.32	0.82
6'	R	1.73	1.40	24'	1.06	1.36	1.08	15'	1.42	0.76
7'	R	1.72	1.35	25'	1.06	1.38	1.08	16'	1.50	0.68
8'	R	1.72	1.32	26'	1.06	1.40	1.08	17'	1.60	0.62
9'	R	1.71	1.26	27'	1.04	1.42	1.08	18'	1.70	0.58
10'	R	1.70	1.20	28'	1.02	1.36	1.06	19'	1.72	0.56
11'	R	1.68	1.14	29'	0.96	1.26	1.04	20'	1.72	0.52
12'	R	1.68	1.08	30'	0.92	1.12	1.00	21'	1.71	0.48
13'	R	1.67	1.03	31'	0.89	1.02	0.97	22'	1.70	0.46
14'	R	1.65	0.96	32'	0.84	0.94	0.94	23'	1.69	0.42
15'	R	1.64	0.90	33'	0.80	0.88	0.91	24'	1.68	0.40
16'	R	1.62	0.82	34'	0.76	0.80	0.86	25'	1.67	0.42
17'	R	1.60	0.74	35'	0.72	0.76	0.83	26'	1.65	0.40
18'	R	1.59	0.68	36'	0.67	0.73	0.80	27'	1.60	0.38
19'	R	1.57	0.62	37'	0.62	0.70	0.78	28'	1.46	0.38
20'	R	1.55	0.54	38'	0.58	0.66	0.72	29'	1.18	0.38
21'	R	1.53	0.46	39'	0.54	0.64	0.70	30'	0.98	0.36
22'	R	1.51	0.40	40'	0.46	0.58	0.68	31'	0.58	0.34
23'	R	1.49	0.32	41'	0.42	0.56	0.64	32'	0.22	0.34
24'	R	1.47	0.29	42'	0.30	0.50	0.58	33'	0.00	0.34
25'	R	1.44	0.14	43'	0.22	0.46	0.54	34'	R	0.34
26'	R	1.40	0.06	44'	0.20	0.46	0.54			
27'	R	1.36	0.00	45'	0.18	0.42	0.48			
28'	R	1.34	R	46'	0.10	0.40	0.46			
				47'	0.08	0.36	0.42			
				48'	R	0.32	0.38			

APPENDIX 3c (Sheet 13)

VOLTAGES ON CHARGE CYCLE 2 - DISCARDED BATTERIES

Battery		31			32			33		
Cell		1 T	2 U	3 T	1 U	2 T	3 U	1 T	2 U	3 T
Time	Rate									
4/23/52										
9:30 PM	0	1.95	1.93	1.98	1.94	1.95	1.94	1.99	1.90	1.4
10:30 PM	5	2.08	2.09	2.09	2.06	2.06	2.05	2.09	2.03	2.0
11:30 PM	"	2.11	2.10	2.10	2.07	2.07	2.06	2.11	2.04	2.0
4/24/52										
9:00 AM	"	2.20	2.20	2.20	2.26	2.26	2.26	2.28	2.22	2.0
10:00 AM	"	2.22	2.22	2.22	2.26	2.26	2.26	2.28	2.22	2.0
11:00 AM	"	2.24	2.24	2.24	2.26	2.26	2.26	2.29	2.22	2.0
12:15 PM	"	2.25	2.26	2.26	2.26	2.26	2.26	2.28	2.22	2.0
1:00 PM	"	2.27	2.29	2.29	2.26	2.26	2.26	2.28	2.22	2.0
2:00 PM	"	2.31	2.38	2.40	off	off	off	off	off	off
3:00 PM	"	2.33	2.39	2.40	"	"	"	"	"	"
4:00 PM	"	2.33	2.40	2.41	"	"	"	"	"	"
5:00 PM	"	2.33	2.40	2.41	"	"	"	"	"	"
6:00 PM	"	2.33	2.40	2.41	"	"	"	"	"	"
7:00 PM	"	2.32	2.38	2.39	"	"	"	"	"	"
8:00 PM	"	2.32	2.38	2.39	"	"	"	"	"	"
9:00 PM	"	2.32	2.38	2.39	"	"	"	"	"	"

TABLE SPECIFIC GRAVITIES DURING CHARGE CYCLE 2

4/23/52									
10:30 PM	1.125	1.140	1.145	1.105	1.120	1.100	1.145	1.095	1.0
11:30 PM	1.135	1.140	1.150	1.115	1.120	1.110	1.155	1.100	1.0
4/24/52									
9:00 AM	1.210	1.210	1.225	1.170	1.180	1.175	1.190	1.140	1.1
10:00 AM	1.215	1.225	1.235	1.175	1.185	1.175	1.195	1.145	1.1
11:00 AM	1.220	1.230	1.240	1.180	1.185	1.180	1.195	1.145	1.1
12:15 PM	1.230	1.235	1.245	1.180	1.185	1.180	1.200	1.150	1.1
1:00 PM	1.230	1.240	1.250	1.180	1.185	1.180	1.200	1.150	1.1
2:00 PM	1.235	1.255	1.260	off	off	off	off	off	off
3:00 PM	1.240	1.260	1.265	"	"	"	"	"	"
4:00 PM	1.245	1.265	1.265	"	"	"	"	"	"
5:00 PM	1.245	1.270	1.270	"	"	"	"	"	"
6:00 PM	1.245	1.270	1.270	"	"	"	"	"	"
7:00 PM	1.250	1.270	1.270	"	"	"	"	"	"
8:00 PM	1.255	1.270	1.270	"	"	"	"	"	"
9:00 PM	1.255	1.270	1.270	"	"	"	"	"	"

APPENDIX 3c (Sheet 14)

VOLTAGES ON CHARGE CYCLE 2
(DISCARDED BATTERIES)

Battery		34			35			36		
Cell		1 U	2 T	3 U	1 T	2 U	3 T	1 U	2 T	
Time	Rate									
4/23/52										
9:30 PM	0	1.96	2.01	1.99	1.92	1.93	1.93	1.97	1.97	1.
10:30 PM	5	2.23	2.11	2.14	2.04	2.04	2.04	2.05	2.05	2.
11:30 PM	"	2.24	2.13	2.15	2.05	2.05	2.05	2.06	2.06	2.
4/24/52										
9:00 AM	"	2.36	2.33	2.34	2.14	2.15	2.14	2.18	2.19	2.
10:00 AM	"	2.36	2.33	2.36	2.16	2.16	2.16	2.20	2.20	2.
11:00 AM	"	2.35	2.32	2.33	2.16	2.17	2.16	2.24	2.24	2.
12:15 PM	"	2.36	2.33	2.34	2.17	2.18	2.18	2.27	2.27	2.
1:00 PM	"	2.36	2.32	2.34	2.18	2.19	2.19	2.29	2.29	2.
2:00 PM	"	off	off	off	2.22	2.23	2.23	2.33	2.33	2.
3:00 PM	"	"	"	"	2.24	2.25	2.26	2.34	2.34	2.
4:00 PM	"	"	"	"	2.27	2.28	2.29	2.34	2.34	2.
5:00 PM	"	"	"	"	2.31	2.33	2.34	2.35	2.35	2.
6:00 PM	"	"	"	"	2.32	2.33	2.34	2.36	2.35	2.
7:00 PM	"	"	"	"	2.32	2.33	2.34	2.33	2.33	2.
8:00 PM	"	"	"	"	2.32	2.33	2.34	2.34	2.34	2.
9:00 PM	"	"	"	"	2.32	2.33	2.34	2.34	2.34	2.

SPECIFIC GRAVITIES DURING CHARGE CYCLE 2

4/23/52									
10:30 PM	1.135	1.155	1.140	1.075	1.080	1.080	1.095	1.100	1
11:30 PM	1.140	1.170	1.150	1.080	1.085	1.085	1.100	1.105	1.
4/24/52									
9:00 AM	1.185	1.210	1.195	1.180	1.175	1.180	1.160	1.170	1.
10:00 AM	1.185	1.215	1.200	1.190	1.185	1.185	1.170	1.180	1.
11:00 AM	1.185	1.215	1.200	1.200	1.190	1.195	1.180	1.190	1.
12:15 PM	1.190	1.215	1.200	1.210	1.195	1.200	1.190	1.200	1.
1:00 PM	1.190	1.215	1.200	1.215	1.200	1.210	1.200	1.205	1.
2:00 PM	off	off	off	1.220	1.205	1.215	1.210	1.220	1.
3:00 PM	"	"	"	1.225	1.215	1.225	1.220	1.225	1.
4:00 PM	"	"	"	1.230	1.225	1.235	1.225	1.235	1.
5:00 PM	"	"	"	1.240	1.235	1.245	1.235	1.240	1.
6:00 PM	"	"	"	1.245	1.245	1.250	1.240	1.245	1.
7:00 PM	"	"	"	1.245	1.250	1.250	1.240	1.250	1.
8:00 PM	"	"	"	1.250	1.255	1.255	1.245	1.250	1.
9:00 PM	"	"	"	1.250	1.250	1.255	1.245	1.250	1.

APPENDIX 3c (Sheet 15)

DISCHARGE VOLTAGES DURING CYCLE 2
(DISCARDED BATTERIES)

Battery	31			32			33		
Cell	1 T	2 U	3 T	1 U	2 T	3 U	1 T	2 U	
300 AMPERES									
Time 4/24/52									
OCV	2.11	2.14	2.15		2.15	2.14	2.15		2.09	1.99	1.
5"	1.67	1.69	1.70	5"	1.48	1.50	1.54	5"	1.44	1.50	0.
30"	1.67	1.70	1.72	30"	1.44	1.48	1.53	30"	1.40	1.45	
1'	1.66	1.70	1.72	1'	1.42	1.45	1.51				
1½'	1.64	1.69	1.70	2'	1.36	1.38	1.46				
2'	1.61	1.67	1.69	3'	1.26	1.28	1.38				
3'	1.56	1.64	1.66	4'	1.11	1.13	1.25				
4'	1.46	1.59	1.63	5'	0.20	0.85	0.90				
5'	1.16	1.52	1.60								
6'	0.54	1.44	1.54								
7'	R	1.02	1.44								
200 AMPERES									
7½'	R	1.14	1.56	5½'	0.78	1.02	0.98	1'	1.56	1.57	I
8'	R	0.99	1.54	6'	0.46	0.90	0.66	1½'	1.53	1.53	I
8½'	R	0.75	1.50								
100 AMPERES									
9'	0.15	1.23	1.68	6½'	1.05	1.27	1.01	2'	1.74	1.72	
10'	0.18	1.31	1.69	7'	1.05	1.27	0.83	3'	1.73	1.70	
11'	0.04	1.24	1.68	8'	0.86	1.18	0.30	4'	1.72	1.68	I
12'	R	1.14	1.66	9'	0.34	1.10	R	5'	1.70	1.64	I
13'	R	0.96	1.64					6'	1.68	1.60	I
14'	R	0.82	1.60					7'	1.66	1.52	I
15'	R	0.70	1.56								
16'	R	0.62	1.48								
17'	R	0.54	1.38								

APPENDIX 3c (Sheet 16)

DISCHARGE VOLTAGES DURING CYCLE 2
(DISCARDED BATTERIES)

Battery		31			32			33	
Cell	1	2	3	1	2	3	1	2	
	T	U	T	U	T	U	T	U	

50 AMPERES

Time 4/24/52				Time				Time			
17½'	R	0.88	1.58	9½'	1.02	1.38	0.60	7½'	1.78	1.68	
18'	R	0.90	1.60	10'	1.00	1.40	0.35	8'	1.78	1.69	
19'	R	0.92	1.61	11'	0.90	1.42	0.06	9'	1.79	1.69	
20'	R	0.88	1.61	12'	0.56	1.35	R	10'	1.77	1.66	
21'	R	0.86	1.60	13'	0.22	1.24	R	11'	1.76	1.62	
22'	R	0.85	1.59	14'	R	1.21	R	12'	1.76	1.60	
23'	R	0.82	1.58					13'	1.75	1.52	
24'	R	0.80	1.56					14'	1.74	1.36	
25'	R	0.78	1.52					15'	1.74	1.24	
26'	R	0.76	1.48					16'	1.72	1.18	
27'	R	0.72	1.42					17'	1.72	1.00	
28'	R	0.70	1.36								
29'	R	0.70	1.30								
30'	R	0.68	1.22								
31'	R	0.63	1.14								
32'	R	0.60	1.06								
33'	R	0.60	1.00								
34'	R	0.60	0.98								
35'	R	0.62	0.94								

APPENDIX 3c (Sheet 18)

DISCHARGE VOLTAGES DURING CYCLE 2
(DISCARDED BATTERIES)

Battery		34			35				36		
Cell	1 U	2 T	3 U		1 T	2 U	3 T		1 U	2 T	[illegible]
300 AMPERES											
Time 4/24/52				Time				Time			
OCV	2.08	2.12	2.10		2.19	2.19	2.19		2.16	2.16	2.[illegible]
5"	0.06	1.30	1.10	5"	1.60	1.65	1.66	5"	1.70	1.67	1.[illegible]
30"	R	1.32	1.04	30"	1.64	1.69	1.69	30"	1.72	1.70	1.7
				1'	1.64	1.69	1.69	1'	1.72	1.70	1.7
				2'	1.62	1.68	1.68	1½'	1.71	1.69	1.6
				3'	1.60	1.66	1.66	2'	1.70	1.68	1.6
				4'	1.56	1.64	1.62	2½'	1.69	1.67	1.6
				5'	1.52	1.62	1.60	3'	1.68	1.66	1.6
				6'	1.46	1.58	1.56	4'	1.65	1.63	1.6
				7'	1.38	1.54	1.50	5'	1.62	1.60	1.6
				8'	1.22	1.48	1.40	6'	1.59	1.56	1.5
				9'	0.90	1.42	1.14	7'	1.54	1.50	1.5
				9½'	0.40	1.34	0.44	8'	1.48	1.42	1.4
								9'	1.36	1.24	1.3
								10'	0.75	0.42	0.9
200 AMPERES											
[illegible]	R	1.30	1.08	10'	0.82	1.50	0.78	10½'	0.60	0.50	1.0
				11'	0.32	1.44	R	11'	0.30	0.24	0.[illegible]
100 AMPERES											
1½'	R	1.70	1.48	11½'	1.18	1.67	0.86	11½'	1.28	1.12	1.4
2'	R	1.66	1.40	12'	1.24	1.68	0.72	12'	1.38	1.18	1.4
3'	R	1.64	1.32	13'	1.22	1.65	0.17	13'	1.43	1.15	1.5
4'	R	1.63	1.20	14'	1.05	1.67	0.10	14'	1.25	0.80	1.4
5'	R	1.56	0.98	15'	0.82	1.65	0.08	15'	0.72	0.37	1.2
6'	R	1.52	0.78	16'	0.58	1.64	R	16'	0.20	0.04	1.0
6½'	R	1.40	0.62	17'	0.32	1.61	R				
				18'	0.05	1.55	R				
				19'	R	1.46	R				
				20'	R	1.28	R				

APPENDIX 3c (Sheet 18)

DISCHARGE VOLTAGES OF DISCARDED BATTERIES DURING CYCLE 2

Battery		34			35			36		
Cell	1 U	2 T	3 U	1 T	2 U	3 T	1 U	2 T	3 U
50 AMPERES									
Time 4/24/52				Time			Time		
7'	R	1.70	1.26	20½'	0.78	1.60	0.80	16½'	1.02	0.86	1.44
8'	R	1.70	1.24	21'	0.78	1.67	0.82	17'	1.04	0.86	1.48
9'	R	1.69	1.20	22'	0.80	1.69	0.85	18'	0.98	0.86	1.66
10'	R	1.68	1.14	23'	0.80	1.69	0.85	19'	0.84	0.84	1.68
11'	R	1.67	1.07	24'	0.75	1.69	0.83	20'	0.68	0.75	1.68
12'	R	1.66	1.02	25'	0.72	1.68	0.82	21'	0.58	0.70	1.68
13'	R	1.65	0.95	26'	0.69	1.68	0.81	22'	0.52	0.68	1.68
14'	R	1.64	0.89	27'	0.66	1.66	0.81	23'	0.46	0.66	1.68
15'	R	1.61	0.81	28'	0.64	1.64	0.79	24'	0.40	0.62	1.68
16'	R	1.60	0.74	29'	0.62	1.62	0.78	25'	0.36	0.62	1.68
17'	R	1.58	0.70	30'	0.60	1.60	0.76	26'	0.32	0.58	1.66
18'	R	1.56	0.60	31'	0.59	1.54	0.76	27'	0.30	0.58	1.64
19'	R	1.53	0.54	32'	0.58	1.43	0.76	28'	0.28	0.56	1.63
20'	R	1.50	0.43	33'	0.56	1.27	0.73	29'	0.24	0.54	1.61
21'	R	1.48	0.37	34'	0.55	1.11	0.72	30'	0.24	0.54	1.56
22'	R	1.46	0.34	35'	0.52	0.80	0.71	31'	0.24	0.54	1.51
23'	R	1.44	0.24	36'	0.52	0.55	0.70	32'	0.21	0.53	1.26
24'	R	1.42	0.20	37'	0.52	0.37	0.69	33'	0.18	0.50	1.14
25'	R	1.34	0.02	38'	0.48	0.20	0.68	34'	0.20	0.50	0.94
				39'	0.46	0.10	0.66	35'	0.18	0.50	0.66
				40'	0.44	0.04	0.65	36'	0.18	0.50	0.34
				41'	0.42	0.00	0.64	37'	0.18	0.48	0.12
				42'	0.38	R	0.62	38'	0.20	0.50	0.04
				43'	0.34	R	0.60				
				44'	0.31	R	0.59				
				45'	0.28	R	0.53				

APPENDIX 3c (Sheet 19)

VOLTAGES (STAND DISCHARGE) Cont'd
(DISCARDED BATTERIES)

Date: 4/25/52

Battery		31			32				33		
Cell	1 T	2 U	3 T		1 U	2 T	3 U		1 T	2 U	3 T
				300 AMPERES							
OCV	1.98	2.00	2.00		1.96	1.96	1.96				
Time				Time				Time			
5"	1.10	1.40	1.42	5"	1.20	1.20	1.20		No discharge		
30"	R*	1.18	1.40	30"	0.84	0.88	0.88		possible		
				200 AMPERES							
1'	R*	1.10	1.42	1'	0.64	0.86	0.74		No discharge possible		
				100 AMPERES							
1½'	R*	1.12	1.54	1½'	0.16	1.06	0.10		No discharge		
2'	R*	0.86	1.45	2'	R	1.10	R		possible		
				50 AMPERES							
2½'	R*	1.08	1.58	2½'	0.00	1.22	R	OCV	2.00	1.88	0.[illegible]
3'	R*	1.00	1.54					5"	1.78	1.72	[illegible]
4'	R*	0.76	1.38					30"	----	----	----

*REVERSED

T = TREATED
U = UNTREATED
" = SECONDS
' = MINUTES

APPENDIX 3c (Sheet 20)

VOLTAGES (STAND DISCHARGE) Cont'd
(DISCARDED BATTERIES)

Date: 4/25/52

Battery	34			35			36		
Cell	1 U	2 T	3 U	1 T	2 U	3 T	1 U	2 T	3 U
300 AMPERES									
OCV				1.95	1.96	1.96	1.90	1.90	1.9
Time	No discharge possible			Time			Time		
				5"	1.15	1.30	1.24	5"	1.42	1.38	1.3
				30"	0.50	1.00	0.84	30"	1.30	1.20	1.2
								1'	0.90	0.72	0.6
200 AMPERES									
	No discharge possible			1'	0.00	0.84	0.86	1½'	0.58	0.60	0.4
100 AMPERES									
OCV	1.99	2.02	2.00	1½'	0.24	1.14	1.12	2'	0.92	0.98	0.7
5"	R*	1.50	1.22	2'	R	0.86	0.80	2½'	0.46	0.62	0.4
0"	R	1.46	1.12								
50 AMPERES									
1'	R*	1.65	1.42	2½'	0.40	1.30	1.18	3'	0.76	1.00	0.8
1½'	R*	1.64	1.28	3'	0.30	1.26	1.02	3½'	0.66	0.92	0.8
2'	R*	1.62	1.18	3½'	0.18	1.14	0.82	4'	0.52	0.78	0.7
2½'	R*	1.60	1.00	4'	R	1.02	0.48	4½'	0.36	0.62	0.6
3'	R*	1.58	0.78	4½'	R	0.92	0.18	5'	0.18	0.46	0.5
3½'	R*	1.57	0.56					5½'	R	0.18	0.4
4'	R*	1.54	0.34								

*REVERSED

T = TREATED
U = UNTREATED
" = SECONDS
' = MINUTES

APPENDIX 3c (Sheet 21)

VOLTAGES ON CHARGE CYCLE 3
(DISCARDED BATTERIES)

Battery			31			32			33		
Cell			1 T	2 U	3 T	1 U	2 T	3 U	1 T	2 U	3 T
Time	Rate										
4/25/52											
3:12 PM	0	OCV	1.92	1.98	1.98	1.93	1.94	1.92	2.00	1.88	1.35
3:15 PM	10		2.01	2.03	2.04	2.00	2.00	1.99	2.08	1.98	2.32
4:15 PM	10		2.12	2.13	2.13	2.09	2.10	2.09	2.14	2.08	2.22
7:25 PM	20		2.38	2.44	2.47	2.36	2.37	2.35	2.43	2.33	2.34
11:00 PM	20		2.39	2.42	2.44	2.33	2.34	2.33	2.36	2.32	2.36
12:20 AM	0		OFF CHARGE - ALL CELLS								
4/28/52											
11:00 AM	0	OCV	2.05	2.10	2.10	2.02	2.02	2.01	1.99	1.85	0.16
1:30 AM	5		RESUME CHARGE - ALL CELLS								
1:30 PM	5		2.31	2.35	2.36	2.28	2.27	2.27	2.26	2.05	2.11
5:00 PM	5		2.31	2.37	2.40	2.27	2.28	2.27	2.28	2.08	2.11
8:00 PM	5		2.32	2.41	2.42	2.31	2.30	2.38	2.30	2.12	2.12
9:05 PM	0		OFF CHARGE - ALL CELLS								
5/1/52											
7:25 PM	0	OCV	2.04	2.10	2.10	2.03	2.03	2.02	1.99	1.85	0.09
4:35 PM	5		RESUME CHARGE - ALL CELLS								
5:40 PM	"		2.17	2.30	2.31	2.20	2.20	2.17	2.19	1.99	2.06
6:35 PM	"		2.32	2.37	2.38	2.28	2.29	2.27	2.28	2.06	2.09
7:25 PM	"		2.32	2.41	2.43	2.28	2.30	2.28	2.29	2.08	2.09
11:00 PM	"		2.33	2.42	2.43	2.29	2.30	2.28	2.30	2.10	2.09
12:00 M	0		OFF CHARGE - ALL CELLS								
5/2/52											
9:25 AM	0	OCV	2.07	2.13	2.13	2.09	2.09	2.08	2.01	1.92	0.11
9:30 AM	20		RESUME CHARGE - ALL CELLS								
9:30 AM	20*		2.49	2.57	2.58	2.44	2.46	2.42	2.46	2.18	2.32
10:30 PM	20*		2.41	2.44	2.46	2.37	2.36	2.36	2.33	2.33	2.38
5/3/52											
9:40 PM	20*		2.38	2.39	2.42	2.34	2.33	2.34	2.30	2.31	2.38
5/4/52											
10:00 PM	20*		2.35	2.40	2.43	2.35	2.34	2.35	2.30	2.31	2.38
5/5/52											
11:15 AM	20*		2.33	2.40	2.44	2.36	2.36	2.36	2.29	2.30	2.35
11:15 PM	20*		2.31	2.38	2.42	2.36	2.36	2.36	2.29	2.28	2.33
5/6/52											
11:30 AM	20*		2.29	2.38	2.43	2.37	2.36	2.36	2.32	2.28	2.33
9:30 PM	20		2.26	2.37	2.42	2.38	2.37	2.36	2.30	2.27	2.30
5/7/52											
8:45 AM	20*		2.23	2.35	2.41	2.37	2.36	2.36	2.30	2.26	2.29
4:00 PM	20*		2.22	2.35	2.41	2.38	2.37	2.36	2.30	2.26	2.29
5/8/52											
9:30 AM	20		2.20	2.34	2.40	2.36	2.36	2.36	2.30	2.26	2.29
11:00 PM	20		2.17	2.32	2.40	2.37	2.38	2.36	2.27	2.24	2.26
5/9/52											
9:30 AM	20		2.15	2.31	2.39	2.37	2.37	2.35	2.27	2.23	2.25

* Water added after reading.

APPENDIX 3c (Sheet 22)

VOLTAGES ON CHARGE CYCLE 3 - DISCARDED BATTERIES

Battery		34			35			36		
Cell		1 U	2 T	3 U	1 T	2 U	3 T	1 U	2 T	3 U
Time	Rate									
4/25/52										
3:12 PM	0 OCV	1.86	2.01	2.00	1.90	1.92	1.91	1.92	1.92	1.92
3:15 PM	10	2.34	2.14	2.18	2.02	2.02	2.02	2.02	2.04	2.03
4:15 PM	10	2.31	2.20	2.26	2.08	2.08	2.08	2.08	2.09	2.08
7:25 PM	20	2.53	2.49	2.52	2.19	2.19	2.19	2.18	2.20	2.19
11:00 PM	20	2.46	2.40	2.43	2.37	2.38	2.40	2.41	2.40	2.41
12:20 AM	0	OFF CHARGE - ALL CELLS								
4/28/52										
11:00 AM	0 OCV	1.98	2.05	2.03	2.06	2.07	2.08	2.08	2.09	2.08
11:30 AM	5	RESUME CHARGE - ALL CELLS								
1:30 PM	5	2.36	2.34	2.34	2.29	2.30	2.31	2.33	2.33	2.33
5:00 PM	5	2.36	2.34	2.35	2.29	2.31	2.32	2.37	2.37	2.36
7:00 PM	5	2.37	2.36	2.37	2.31	2.32	2.34	2.38	2.38	2.38
8:05 PM	0	OFF CHARGE - ALL CELLS								
5/1/52										
1:25 PM	0 OCV	2.01	2.05	2.03	2.06	2.07	2.08	2.09	2.10	2.09
2:35 PM	5	RESUME CHARGE - ALL CELLS								
4:40 PM	"	2.22	2.28	2.24	2.24	2.26	2.27	2.31	2.32	2.31
6:35 PM	"	2.36	2.36	2.34	2.30	2.31	2.32	2.35	2.35	2.34
8:25 PM	"	2.38	2.36	2.36	2.30	2.32	2.34	2.38	2.38	2.38
11:00 PM	"	2.38	2.36	2.37	2.31	2.33	2.35	2.38	2.38	2.38
12:00 M	0	OFF CHARGE - ALL CELLS								
5/2/52										
9:25 AM	0 OCV	2.02	2.08	2.06	2.11	2.12	2.12	2.12	2.12	2.12
9:30 AM	20	RESUME CHARGE - ALL CELLS								
7:30 AM	20*	2.58	2.55	2.56	2.46	2.48	2.50	2.54	2.54	2.54
10:30 PM	20*	2.48	2.39	2.44	2.38	2.37	2.34	2.41	2.39	2.43
5/3/52										
3:40 PM	20*	2.46	2.38	2.44	2.35	2.33	2.37	2.37	2.35	2.38
5/4/52										
10:00 PM	20*	2.47	2.38	2.45	2.37	2.35	2.37	2.38	2.36	2.39
5/5/52										
11:15 AM	20*	2.46	2.36	2.48	2.39	2.37	2.39	2.38	2.38	2.40
11:15 PM	20*	2.45	2.37	2.46	2.38	2.37	2.39	2.36	2.38	2.40
5/6/52										
11:30 AM	20*	2.47	2.37	2.47	2.40	2.37	2.40	2.36	2.38	2.40
9:30 PM	20	2.46	2.37	2.47	2.39	2.37	2.39	2.37	2.36	2.39
5/7/52										
8:45 AM	20*	2.46	2.37	2.46	2.38	2.36	2.39	2.34	2.35	2.39
4:00 PM	20*	2.46	2.36	2.44	2.39	2.37	2.39	2.34	2.35	2.39
5/8/52										
9:30 AM	20	2.44	2.36	2.43	2.38	2.35	2.38	2.34	2.34	2.39
11:00 PM	20	2.44	2.36	2.41	2.39	2.37	2.39	2.35	2.36	2.39
5/9/52										
8:30 AM	20	2.41	2.34	2.38	2.39	2.37	2.39	2.35	2.35	2.39

* Water added after readings.

APPENDIX 3c (Sheet 23)

SPECIFIC GRAVITIES DURING CHARGE CYCLE 3
(DISCARDED BATTERIES)

Battery		31			32			33		
Cell		1 T	2 U	3 T	1 U	2 T	3 U	1 T	2 U	3 T
Time	Rate									
4/25/52										
8:12 PM	0	1.105	1.115	1.120	1.120	1.100	1.090	1.135	1.060	1.050
7:25 PM	20	1.160	1.175	1.200	1.165	1.175	1.150	1.200	1.135	1.130
11:00 PM	20	1.240	1.250	1.270	1.180	1.200	1.190	1.200	1.195	1.175
4/28/52										
11:00 AM	0	1.215	1.255	1.260	1.170	1.180	1.160	1.120	1.060	1.040
2:30 PM	5	1.225	1.265	1.260	1.170	1.190	1.120	1.135	1.060	1.050
5:00 PM	5	1.235	1.270	1.270	1.180	1.190	1.180	1.150	1.095	1.085
9:00 PM	5	1.235	1.280	1.280	1.190	1.205	1.190	1.160	1.125	1.120
5/1/52										
4:25 PM	0	1.225	1.275	1.270	1.175	1.195	1.175	1.135	1.065	1.075
9:35 PM	5	1.225	1.280	1.275	1.175	1.195	1.175	1.140	1.070	1.080
8:25 PM	5	1.235	1.280	1.280	1.180	1.200	1.185	1.145	1.090	1.085
11:00 PM	5	1.240	1.280	1.280	1.200	1.200	1.190	1.160	1.115	1.110
5/2/52										
9:25 AM	0*	1.250	1.285	1.280	1.200	1.215	--	1.160	1.100	1.075
10:30 PM	20*	1.270	1.275	1.285	1.235	1.245	1.235	1.175	1.255	1.245
5/3/52										
9:40 PM	20*	--	--	--	--	--	--	--	--	--
5/4/52										
10:00 PM	20*	1.300	--	--	--	--	--	--	--	--
5/5/52										
1:15 AM	20*	1.270	1.270	1.275	1.255	1.250	1.255	1.220	1.260	1.250
1:15 PM	20*	1.265	1.265	1.275	1.255	1.260	1.250	1.230	1.255	1.240
5/6/52										
1:30 AM	20*	1.270	1.290	1.290	1.265	1.270	1.270	1.250	1.260	1.250
9:30 PM	20*	1.235	1.275	1.275	1.250	1.250	1.245	1.225	1.240	1.225
5/7/52										
8:45 AM	20*	1.220	1.275	1.295	1.265	1.250	--	1.240	1.240	1.230
1:00 PM	20*	1.225	1.280	1.285	1.255	1.270	1.260	1.250	1.250	1.240
5/8/52										
9:30 AM	20*	1.220	--	--	--	--	--	1.260	--	--
11:00 PM	20*	1.175	1.265	1.265	1.245	1.255	1.250	1.230	1.230	1.220
5/9/52										
9:30 AM	20	1.175	1.290	1.290	1.270	1.270	1.265	1.235	1.240	1.230

*All cells watered following these specific gravity readings.

APPENDIX 3c (Sheet 24)

SPECIFIC GRAVITIES DURING CHARGE CYCLE 3
(DISCARDED BATTERIES)

Battery		34			35			36		
Cell		1 U	2 T	3 U	1 T	2 U	3 T	1 U	2 T	3 U
Time	Rate									
4/25/52										
8:12 PM	0	1.125	1.160	1.135	1.060	1.050	1.060	1.070	1.075	1.070
9:25 PM	20	1.175	1.210	1.190	1.150	1.130	1.150	1.120	1.125	1.125
11:00 PM	20	1.175	1.210	1.195	1.235	1.235	1.230	1.240	1.250	1.250
4/28/52										
1:00 AM	0	1.155	1.210	1.185	1.215	1.230	1.230	1.235	1.250	1.235
1:30 PM	5	1.165	1.210	1.200	1.215	1.230	1.235	1.240	1.250	1.240
2:00 PM	5	1.185	1.220	1.200	1.230	1.240	1.240	1.250	1.260	1.250
3:00 PM	5	1.195	1.230	1.210	1.240	1.245	1.255	1.265	1.270	1.260
5/1/52										
1:25 PM	0	--	1.215	1.195	1.225	1.210	1.240	1.250	1.260	1.250
2:35 PM	5	1.190	1.225	1.205	1.225	1.245	1.245	1.260	1.265	1.250
3:25 PM	5	1.190	1.225	1.210	1.230	1.250	1.245	1.260	1.270	1.260
11:00 PM	5	1.195	1.235	1.215	1.235	1.250	1.260	1.265	1.270	1.265
5/2/52										
9:25 AM	0*	1.200	1.235	1.220	1.240	1.260	1.260	1.265	1.270	1.265
10:30 PM	20*	1.220	1.245	1.225	1.260	1.265	1.260	1.265	1.285	1.270
5/3/52										
9:40 PM	20*	--	--	--	--	--	--	--	--	--
5/4/52										
10:00 PM	20*	1.250	--	--	--	--	--	--	--	--
5/5/52										
11:15 AM	20*	1.220	1.240	1.225	1.255	1.250	1.265	1.260	1.280	1.260
11:15 PM	20*	1.225	1.245	1.225	1.260	1.255	1.260	1.260	1.285	1.260
5/6/52										
11:30 AM	20*	1.240	1.255	1.225	1.260	1.255	1.265	1.260	1.280	1.280
9:30 PM	20*	1.215	1.225	1.215	1.245	1.240	1.250	1.245	1.275	1.250
5/7/52										
8:45 AM	20*	1.225	1.260	1.230	1.265	1.265	--	1.265	--	1.275
4:00 PM	20*	1.230	1.240	1.215	1.265	1.255	1.265	1.260	1.275	1.270
5/8/52										
9:30 AM	20*	--	--	--	--	--	--	1.270	--	--
11:00 PM	20*	1.225	1.220	1.200	1.255	1.255	1.260	1.250	1.275	1.260
5/9/52										
9:30 AM	20	1.225	1.220	1.210	1.260	1.260	1.265	1.270	1.275	1.270

*All cells watered following these specific gravity readings.

APPENDIX 3c (Sheet 25)

DISCHARGE VOLTAGES OF DISCARDED BATTERIES CYCLE 3

Battery	31			32				33		
Cell	1 T	2 U	3 T	1 U	2 T	3 U		1 T	2 U	3 T
				300 AMPERES						
Time				Time				Time		
OCV	2.02	2.12	2.13	OCV	2.10	2.10	2.10	OCV	2.07	2.05	2.01
5"	1.60	1.76	1.75	5"	1.60	1.51	1.60	5"	1.24	1.60	0.20
30"	1.54	1.76	1.75	30"	1.58	1.41	1.56	30"	1.32	1.66	R
1'	1.46	1.73	1.73	1'	1.54	1.30	1.51				
1½'	1.34	1.72	1.71	2'	1.46	1.04	1.44				
2'	1.16	1.70	1.70	3'	1.36	0.50	1.30				
2½'	0.74	1.68	1.68	4'	1.26	R	1.14				
3'	0.00	1.66	1.66	4½'	1.20	R	1.07				
4'	R*	1.62	1.62								
5'	R	1.57	1.58								
6'	R	1.54	1.56								
				200 AMPERES						
6½'	R	1.66	1.68	5'	1.40	R	1.28	1'	1.42	1.70	R
7'	R	1.64	1.66	6'	1.34	R	1.14	2'	1.36	1.68	R
8'	R	1.60	1.62	7'	1.26	R	1.00	3'	1.32	1.64	R
9'	R	1.54	1.59	8'	1.16	R	0.78	4'	1.24	1.62	R
10'	R	1.50	1.54								

* REVERSED

APPENDIX 3c (Sheet 26)

DISCHARGE VOLTAGES OF DISCARDED BATTERIES CYCLE 3

Battery		31			32			33		
Cell	1 T	2 U	3 T	1 U	2 T	3 U	1 T	2 U	3 T	
100 AMPERES										
Time				Time				Time		
10½'	R	1.68	1.72	8½'	1.52	R	1.32	4½'	1.52	1.78	R
11'	R	1.68	1.72	9'	1.52	R	1.34	5'	1.52	1.78	R
12'	R	1.68	1.72	10'	1.52	R	1.30	6'	1.50	1.77	R
13'	R	1.68	1.72	11'	1.50	R	1.24	7'	1.48	1.76	R
14'	R	1.66	1.70	12'	1.46	R	1.14	8'	1.45	1.75	R
15'	R	1.63	1.68	13'	1.43	R	1.09	9'	1.42	1.73	R
16'	R	1.60	1.66	14'	1.38	R	1.00	10'	1.38	1.72	R
17'	R	1.56	1.63	15'	1.32	R	0.88	11'	1.34	1.71	R
18'	R	1.52	1.60	16'	1.28	R	0.76	12'	1.28	1.69	R
19'	R	1.44	1.55	17'	1.18	R	0.58	13'	1.20	1.68	R
20'	R	1.32	1.50	18'	1.10	R	0.42	14'	1.10	1.66	R
21'	R	1.18	1.44	19'	1.00	R	0.26	15'	1.00	1.64	R
21½'	R	1.08	1.40	19½'	0.94	R	0.16	16'	0.80	1.62	R
								17'	0.50	1.58	R
								18'	0.20	1.54	R
50 AMPERES										
22'	R	1.40	1.60	20'	1.38	R	0.90	18½'	1.00	1.70	R
23'	R	1.44	1.62	21'	1.40	R	0.92	19'	1.04	1.72	R
24'	R	1.44	1.62	22'	1.39	R	0.91	20'	1.04	1.71	R
25'	R	1.42	1.61	23'	1.39	R	0.88	21'	1.01	1.71	R
26'	R	1.38	1.60	24'	1.36	R	0.82	22'	0.97	1.70	R
27'	R	1.34	1.59	25'	1.34	R	0.76	23'	0.90	1.70	R
28'	R	1.28	1.58	26'	1.30	R	0.68	24'	0.82	1.69	R
29'	R	1.22	1.56	27'	1.26	R	0.62	25'	0.76	1.68	R
30'	R	1.16	1.54	28'	1.21	R	0.54	26'	0.70	1.68	R
31'	R	1.07	1.51	29'	1.16	R	0.46	27'	0.63	1.66	R
32'	R	0.98	1.47	30'	1.12	R	0.38	28'	0.58	1.66	R
33'	R	0.88	1.43	31'	1.08	R	0.32	29'	0.50	1.65	R
				32'	1.03	R	0.24	30'	0.40	1.63	R
				33'	0.98	R	0.14	31'	0.30	1.61	R
				34'	0.90	R	0.06	32'	0.20	1.60	R
				35'	0.82	R	0.00	33'	0.16	1.58	R
								34'	0.10	1.56	R
								35'	0.04	1.53	R
								36'	R	1.50	R
								37'	R	1.45	R
								38'	R	1.41	R
								38½'	R	1.38	R

APPENDIX 3c (Sheet 2)

DISCHARGE VOLTAGES OF DISCARDED BATTERIES CYCLE 3

Battery	34			35			36		
Cell	1 U	2 T	3 U	1 T	2 U	3 T	1 U	2 T	3 U
300 AMPERES									
Time OCV	2.04	2.04	2.03	Time OCV	2.10	2.10	2.04	Time OCV	2.08	2.10	2.10
				5"	1.64	1.70	1.70	5"	1.69	1.70	1.69
				30"	1.63	1.71	1.71	30"	1.70	1.71	1.69
				1'	1.60	1.69	1.69	1'	1.68	1.70	1.68
	No discharge possible at 300 amps.			2'	1.54	1.66	1.66	1½'	1.67	1.68	1.66
				3'	1.46	1.63	1.62	2'	1.66	1.68	1.65
				4'	1.34	1.60	1.59	3'	1.62	1.64	1.62
				5'	1.12	1.54	1.53	4'	1.60	1.61	1.59
				6'	0.80	1.48	1.46	5'	1.55	1.57	1.54
				7'	R	1.38	1.31	6'	1.50	1.52	1.49
				8'	R	1.26	1.06	7'	1.44	1.46	1.42
								8'	1.36	1.39	1.34
								9'	1.26	1.29	1.23
								10'	0.88	1.06	0.94
								10½'	0.20	0.86	0.66
200 AMPERES									
	No discharge possible at 200 amps.			8½'	R	1.48	1.28	11'	0.48	1.10	0.97
				9'	R	1.46	1.22	12'	R	0.90	0.66
				10'	R	1.40	1.00				
				11'	R	1.28	0.62				
				11½'	R	1.22	0.44				
150 AMPERES									
OCV	2.04	2.04	2.03								
"	R	1.20	0.40								

APPENDIX 3c (Sheet 28)

DISCHARGE VOLTAGES OF DISCARDED BATTERIES CYCLE 3

Battery		34			35				36		
Cell	1 U	2 T	3 U		1 T	2 U	3 T		1 U	2 T	3 U
					100 AMPERES						
Time				Time				Time			
30"	R	1.42	0.04	12'	0.20	1.58	1.16	12½'	0.78	1.42	1.38
				13'	0.24	1.58	1.18	13'	0.74	1.44	1.42
				14'	0.16	1.58	1.10	14'	0.60	1.40	1.40
				15'	R	1.55	1.02	15'	0.40	1.28	1.30
				16'	R	1.48	0.86	16'	0.26	1.16	1.17
				17'	R	1.42	0.78	17'	0.10	1.02	1.00
				18'	R	1.32	0.66	18'	0.00	0.82	0.80
				19'	R	1.24	0.55	19'	R	0.50	0.57
				20'	R	1.12	0.44	20'	R	0.28	0.38
				21'	R	0.96	0.36				
				21½'	R	0.86	0.30				
				50 AMPERES							
1'	R	1.60	0.30	22'	R	1.38	1.98	20½'	0.74	0.94	1.04
1½'	R	1.50	R	23'	R	1.48	1.04	21'	0.82	0.98	1.08
2'	R	1.46	R	24'	R	1.48	1.03	22'	0.94	1.02	1.14
				25'	R	1.47	1.00	23'	1.00	1.02	1.14
				26'	R	1.43	0.96	24'	1.06	1.00	1.13
				27'	R	1.37	0.92	25'	1.12	0.96	1.10
				28'	R	1.32	0.88	26'	1.16	0.98	1.07
				29'	R	1.26	0.84	27'	1.22	0.87	1.02
				30'	R	1.18	0.80	28'	1.24	0.82	0.96
				31'	R	1.10	0.76	29'	1.23	0.80	0.94
				32'	R	1.04	0.72	30'	1.20	0.75	0.88
				33'	R	0.98	0.70	31'	1.12	0.72	0.84
				34'	R	0.88	0.66	32'	1.06	0.68	0.80
				35'	R	0.83	0.64	33'	1.02	0.66	0.76
				36'	R	0.76	0.60	34'	0.96	0.64	0.73
				37'	R	0.72	0.58	35'	0.90	0.62	0.70
				38'	R	0.68	0.54	36'	0.84	0.60	0.66
				39'	R	0.64	0.52	37'	0.78	0.60	0.64
				40'	R	0.62	0.50	38'	0.71	0.59	0.60
				41'	R	0.56	0.46	39'	0.64	0.58	0.58
				42'	R	0.52	0.42	40'	0.58	0.58	0.56
								41'	0.50	0.56	0.52
								42'	0.44	0.56	0.52
								43'	0.36	0.56	0.50
								44'	0.30	0.54	0.48
								45'	0.28	0.54	0.46
								46'	0.18	0.54	0.44
								47'	0.12	0.52	0.44
								48'	0.06	0.52	0.42
								49'	0.00	0.50	0.38
								50'	R	0.50	0.38
								51'	R	0.46	0.32
								52'	R	0.44	0.30
								53'	R	0.44	0.28
								54'	R	0.42	0.22
								55'	R	0.40	0.20

APPENDIX 3d

Ampere hours and watt hours obtained for discarded batteries for each cycle of successive discharges and after an overnight stand and after a 7-day overcharge.

Battery #	1			3			4			5			6			7		
Cell #	1 T	2 U	3 T	1 U	2 T	3 U	1 T	2 U	3 T	1 U	2 T	3 U	1 T	2 U	3 T	1 U	2 T	3 U
AMPERE-HOURS																		
Cycle 1st	51.7	52.9	45.2	10.3	10.3	10.3	31.8	56.6	56.6	37.6	51.0	49.3	1.2	32.3	32.3	48.5	45.2	46.8
2nd	43.4	46.3	37.6	10.0	10.0	10.0	29.9	51.6	52.8	32.4	48.4	47.6	0.0	16.6	16.6	45.1	41.3	44.3
No chg.	6.7	7.9	6.7	2.5	1.6	2.5	2.4	8.3	9.1	2.4	8.3	7.5	0.0	0.4	0.0	10.4	8.4	10.4
3rd	86.1	67.1	86.1	2.4	2.4	2.4	3.6	87.9	87.9	27.4	81.2	81.2	0.8	7.5	6.7	2.4	19.9	19.9
TOTAL AMPERE-HOURS	187.9	174.2	175.6	25.2	24.3	25.2	67.7	204.4	206.4	99.8	188.9	185.6	2.0	56.8	55.6	106.4	114.8	121.4
WATT-HOURS																		
Cycle 1st	78.4	88.8	61.9	7.4	15.8	6.0	41.9	83.9	82.7	53.6	81.7	69.1	0.5	46.6	35.3	64.7	57.3	55.1
2nd	61.0	76.8	54.2	9.0	7.2	7.6	35.5	73.8	85.3	48.0	77.3	67.4	0.0	30.3	27.6	60.5	52.2	57.0
No chg.	6.9	12.2	6.0	1.6	0.4	1.4	2.9	11.1	14.4	3.1	10.4	6.9	0.0	0.7	0.0	10.8	15.1	13.2
3rd	121.7	83.2	128.4	1.0	1.0	1.1	2.1	150.5	131.4	28.0	113.4	112.0	0.1	10.0	4.0	7.5	81.5	59.4
TOTAL WATT-HOURS	268.0	261.0	250.5	19.0	24.4	16.1	82.4	319.3	313.8	132.7	282.8	255.4	0.6	87.6	66.9	143.5	206.1	184.7

APPENDIX 3d (Sheet 2)

Ampere hours and watt hours obtained for discarded batteries for each cycle of successive discharges and after an overnight stand and after a 7-day overcharge.

Battery #	10			12			13			17			18			19		
Cell #	1 T	2 U	3 T	1 U	2 T	3 U	1 T	2 U	3 T	1 U	2 T	3 U	1 T	2 U	3 T	1 U	2 T	3 U
AMPERE-HOURS																		
Cycle 1st	72.2	74.2	74.2	67.1	54.6	67.5	42.5	55.9	54.8	66.3	66.3	64.0	75.0	71.4	75.0	69.1	58.6	67.9
2nd	75.4	75.4	75.4	66.7	54.2	67.5	37.9	51.3	51.3	65.4	64.3	64.9	74.2	65.3	74.2	66.3	48.2	64.2
No chg.	10.5	6.7	9.9	13.8	6.7	12.8	5.0	12.5	12.9	12.2	13.3	13.3	8.0	2.6	8.0	13.5	5.0	13.5
3rd	32.5	3.8	14.9	32.3	1.3	32.3	11.9	8.9	3.1	2.5	12.2	13.7	2.5	7.2	24.2	46.7	13.8	48.3
TOTAL AMPERE-HOURS	190.6	160.1	174.4	179.9	116.8	180.1	97.3	128.6	122.1	146.4	156.1	155.9	159.7	146.5	181.4	195.6	125.6	193.9
WATT-HOURS																		
Cycle 1st	96.3	63.8	76.8	93.9	63.4	91.4	53.7	69.0	74.9	77.7	79.6	85.1	64.4	54.7	110.1	103.3	73.4	96.1
2nd	89.2	65.5	71.9	89.0	57.7	94.0	50.0	61.9	70.0	67.7	65.9	84.5	53.9	46.2	104.1	93.9	59.2	87.9
No chg.	11.7	1.7	6.6	19.8	6.3	10.3	6.5	13.9	18.7	7.1	10.2	13.7	4.3	0.7	12.2	16.9	5.8	14.9
3rd	55.7	3.2	10.2	39.9	0.9	53.5	18.1	5.5	0.5	1.9	6.1	23.9	1.5	2.8	38.2	42.2	12.6	67.7
TOTAL WATT-HOURS	252.9	134.2	165.5	242.6	128.3	249.2	128.3	150.3	164.1	154.4	161.8	207.2	124.1	104.4	264.6	256.3	151.0	266.6

APPENDIX 3d (Sheet 3)

Ampere hours and watt hours obtained for discarded batteries for each cycle of successive discharges, after an overnight stand and after a 7-day overcharge.

BATTERY	31			32			33		
Cell No.	1	2	3	1	2	3	1	2	3
	T	U	T	U	T	U	T	U	T
				Ampere hours					
1st. Cycle	40.7	73.4	73.4	29.9	34.1	32.5	17.8	17.8	0.0
2nd. Cycle	37.4	69.7	69.7	37.1	37.5	35.4	22.9	22.9	1.2
No Charge	2.8	7.4	7.4	4.4	5.2	4.4	0.2	0.2	0.0
3rd. Cycle	15.0	73.4	73.4	67.5	17.4	66.2	51.9	54.4	1.2
Total Ampere Hours:	95.9	223.9	223.9	138.9	94.2	138.5	92.8	95.3	2.4
				Watt hours					
1st. Cycle	38.8	81.8	105.8	30.8	39.6	32.8	61.6	28.6	0.0
2nd. Cycle	42.8	85.3	109.4	39.6	48.3	40.4	38.3	35.5	0.4
No Charge	0.7	8.2	10.7	3.4	5.3	3.7	0.4	0.3	0.0
3rd. Cycle	15.8	113.1	119.4	87.6	15.8	66.3	54.9	90.0	0.1
Total Watt Hours:	98.1	288.4	345.3	161.4	109.0	143.2	155.2	154.4	0.5

APPENDIX 3d (Sheet 4)

Ampere hours and watt hours obtained for discarded batteries for each cycle of successive discharges, after an overnight stand and after a 7-day overcharge.

BATTERY		34			35			36	
Cell No.	1	2	3	1	2	3	1	2	3
	U	T	U	T	U	T	U	T	U
					Ampere hours				
1st. Cycle	1.2	29.0	28.2	89.3	89.8	89.8	66.7	63.2	67.5
2nd. Cycle	1.2	28.6	28.6	84.1	83.3	75.6	80.2	80.2	80.1
No Charge	0.0	3.7	3.7	5.2	7.8	7.8	10.7	10.9	10.9
3rd.Cycle	0.0	2.0	1.6	37.4	85.3	85.3	91.7	100.0	100.0
Total Ampere Hours:	2.4	63.3	62.1	216.0	266.2	258.5	249.3	254.3	258.5
					Watt hours				
1st. Cycle	0.4	45.3	26.4	84.6	115.9	94.5	94.4	67.2	101.3
2nd, Cycle	0.4	43.8	25.7	90.8	124.6	89.7	93.9	91.3	114.3
No Charge	0.0	5.8	3.6	2.5	8.2	7.2	17.6	18.3	14.8
3rd.Cycle	0.0	2.9	0.3	41.0	117.7	95.5	96.8	115.2	112.5
Total Watt Hours:	0.8	97.8	56.0	218.9	366.4	286.9	302.7	292.0	342.9

APPENDIX 3d (Sheet 5)

Ampere hours obtained for discarded batteries at each stage in cycle of successive discharges at 300, 200, 100 and 50 amperes and after an overnight stand and after a 7-day overcharge.

Battery		1			3			4		
Cell		1 T	2 U	3 T	1 U	2 T	3 U	1 T	2 U	3 T
	Rate	Ampere hours								
1st Cycle	300	37.5	37.5	36.0	0.0	0.0	0.0	27.6	30.0	30.0
	200	1.6	1.6	0.0	1.6	1.6	1.6	0.0	11.6	11.6
	100	4.2	4.2	4.2	3.3	3.3	3.3	0.0	10.8	10.8
	50	8.4	9.6	5.0	5.4	5.4	5.4	4.2	4.2	4.2
2nd Cycle	300	35.1	35.1	35.1	0.0	0.0	0.0	24.9	24.9	24.9
	200	1.6	1.6	0.0	1.6	1.6	1.6	0.0	15.0	15.0
	100	4.2	5.0	0.0	4.2	4.2	4.2	0.0	6.7	6.7
	50	2.5	4.6	2.5	4.2	4.2	4.2	5.0	5.0	6.2
No Charge Cycle	300	5.1	5.1	5.1	0.0	0.0	0.0	2.4	2.4	2.4
	200	1.6	1.6	1.6	0.0	0.0	0.0	0.0	3.4	3.4
	100	0.0	0.8	0.0	0.8	0.8	0.8	0.0	2.5	2.5
	50	0.0	0.4	0.0	1.7	0.8	1.7	0.0	0.0	0.8
3rd Cycle	300	52.5	52.5	52.5	0.0	0.0	0.0	3.6	5.1	5.1
	200	6.6	5.0	6.6	0.0	0.0	0.0	0.0	6.6	6.6
	100	15.8	5.0	15.8	0.8	0.8	0.8	0.0	60.8	60.8
	50	11.2	4.6	11.2	1.6	1.6	1.6	0.0	15.4	15.4

Battery		5			6			7			Total	
Cell		1 U	2 T	3 U	1 T	2 U	3 T	1 U	2 T	3 U	T	U
	Rate	Ampere hours										
1st Cycle	300	35.1	35.1	35.1	1.2	2.4	2.4	27.6	27.6	27.6	197.4	195.3
	200	0.0	3.4	3.4	0.0	1.6	1.6	8.4	8.4	8.4	28.2	38.2
	100	2.5	8.3	8.3	0.0	8.3	8.3	5.0	5.0	5.0	44.1	50.7
	50	0.0	4.2	2.5	0.0	20.0	20.0	7.5	4.2	5.8	55.6	60.4
2nd Cycle	300	32.4	35.1	35.1	0.0	0.0	0.0	27.6	27.6	27.6	182.7	182.7
	200	0.0	1.6	1.6	0.0	0.0	0.0	5.0	5.0	5.0	24.8	31.4
	100	0.0	7.5	7.5	0.0	0.0	0.0	6.7	5.8	6.7	28.4	41.0
	50	0.0	4.2	3.4	0.0	16.6	16.6	5.8	2.9	5.0	44.1	46.8
No Charge Cycle	300	2.4	2.4	2.4	0.0	0.0	0.0	5.1	5.1	5.1	22.5	22.5
	200	0.0	3.4	3.4	0.0	0.0	0.0	1.6	1.6	1.6	11.6	11.6
	100	0.0	1.7	1.7	0.0	0.0	0.0	2.5	1.7	2.5	6.7	11.6
	50	0.0	0.8	0.0	0.0	0.4	0.0	1.2	0.0	1.2	2.4	6.6
3rd Cycle	300	17.4	17.4	17.4	0.0	0.0	0.0	2.4	2.4	2.4	133.5	97.2
	200	10.0	20.0	20.0	0.8	1.6	1.6	0.0	1.6	1.6	43.8	44.8
	100	0.0	31.7	31.7	0.0	1.7	1.7	0.0	7.5	7.5	134.1	108.3
	50	0.0	12.1	12.1	0.0	4.2	3.4	0.0	8.4	8.4	62.3	47.9

APPENDIX 3d (Sheet 6)

Ampere hours obtained for discarded batteries at each stage in 3 cycles of successive discharges at 300, 200, 100 and 50-amperes. Also after an overnight stand and a 7-day overcharge.

BATTERY		10			12			13		
Cell No.		1	2	3	1	2	3	1	2	3
	Rate	T	U	T	U	T	U	T	U	T
1st. Cycle	300	32.5	32.5	32.5	45.0	43.7	45.0	37.5	37.5	37.5
	200	11.7	11.7	11.7	5.0	0.0	5.0	0.0	5.0	5.0
	100	16.7	16.7	16.7	7.5	1.7	7.5	0.0	6.7	6.7
	50	11.3	13.3	13.3	9.6	9.2	10.0	5.0	6.7	5.6
2nd. Cycle	300	32.5	32.5	32.5	40.0	38.8	40.0	35.0	35.0	35.0
	200	13.3	13.3	13.3	11.7	0.0	11.7	0.0	5.0	5.0
	100	15.0	15.0	15.0	7.5	7.1	7.5	0.0	6.7	6.7
	50	14.6	14.6	14.6	7.5	8.3	8.3	2.9	4.6	4.6
No Charge Cycle	300	2.5	2.5	2.5	5.0	5.0	5.0	5.0	5.0	5.0
	200	1.7	1.7	1.7	1.7	1.7	1.6	0.0	0.0	0.0
	100	4.2	1.7	3.8	3.3	0.0	3.3	0.0	6.7	6.7
	50	2.1	0.8	1.9	3.8	0.0	2.9	0.0	0.8	1.2
3rd. Cycle	300	5.0	3.8	5.0	2.5	1.3	2.5	0.4	0.4	0.4
	200	1.7	0.0	1.7	5.0	0.0	5.0	1.4	1.4	1.4
	100	5.8	0.0	4.2	4.8	0.0	4.8	4.2	4.2	0.0
	50	20.0	0.0	4.0	20.0	0.0	20.0	5.9	2.9	1.3

APPENDIX 3d (Sheet 7)

Ampere hours obtained for discarded batteries at each stage in 3 cycles of successive discharges at 300, 200, 100, and 50-amperes. Also after an overnight stand and a 7-day overcharge.

Battery		17			18			19		
Cell No.		1 U	2 T	3 U	1 T	2 U	3 T	1 U	2 T	3 U
	Rate									
1st. Cycle	300	35.0	35.0	35.0	27.5	27.5	27.5	42.5	42.5	42.5
	200	11.7	11.7	11.7	10.0	10.0	10.0	8.3	6.7	8.3
	100	11.7	11.7	11.3	22.5	20.8	22.5	10.0	1.3	10.0
	50	7.9	7.9	6.0	15.0	13.1	15.0	8.3	8.1	7.1
2nd. Cycle	300	40.0	40.0	40.0	27.5	27.5	27.5	42.5	41.3	42.5
	200	8.3	8.3	8.3	10.0	9.2	10.0	10.0	0.0	10.0
	100	8.3	7.5	8.3	22.5	14.6	22.5	6.7	0.0	6.7
	50	8.8	8.5	8.3	14.2	14.0	14.2	7.1	6.9	5.0
No Charge Cycle	300	5.0	5.0	5.0	0.4	0.4	0.4	5.0	5.0	5.0
	200	3.3	3.3	3.3	1.4	1.4	1.4	3.3	0.0	3.3
	100	2.9	3.3	3.3	3.3	0.8	3.3	2.9	0.0	2.9
	50	1.0	1.7	1.7	2.9	0.0	2.9	2.3	0.0	2.3
3rd. Cycle	300	2.5	2.5	2.5	2.5	2.5	2.5	12.5	12.5	12.5
	200	0.0	1.7	1.7	0.0	1.7	1.7	5.0	0.0	5.0
	100	0.0	4.2	6.7	0.0	2.1	5.0	15.0	1.3	15.0
	50	0.0	3.8	2.8	0.0	0.9	15.0	14.2	0.0	15.8

Total	300		200		100		50	
	T	U	T	U	T	U	T	U
Cycle 1	316.2	342.5	66.8	76.7	99.8	102.2	90.4	82.0
Cycle 2	310.1	340.0	59.9	87.5	96.3	81.3	88.8	78.2
No Charge	30.8	37.9	11.2	19.6	24.6	27.8	12.7	15.6
Cycle 3	32.1	41.7	9.6	24.8	24.7	52.6	50.0	76.6

APPENDIX 3d (Sheet 8)

Ampere hours obtained for discarded batteries at each stage in cycle of successive discharges at 300, 200, 100, and 50 amperes and after an overnight stand and after a 7-day overcharge.

Battery		31			32			33		
Cell		1 T	2 U	3 T	1 U	2 T	3 U	1 T	2 U	3 T
	Rate									
	300	32.4	35.1	35.1	22.5	22.5	22.5	1.2	1.2	0
1st	200	0	5.0	5.0	1.6	1.6	1.6	1.6	1.6	0
cycle	100	8.3	17.5	17.5	5.0	5.0	4.2	5.8	5.8	0
	50	0	15.8	15.8	0.8	5.0	4.2	9.2	9.2	0
	300	32.4	35.1	35.1	24.9	24.9	24.9	2.4	2.4	1.2
2nd	200	0	5.0	5.0	3.4	3.4	3.4	3.4	3.4	0
cycle	100	5.0	15.0	15.0	5.0	5.0	5.0	9.2	9.2	0
	50	0	14.6	14.6	3.8	4.2	2.1	7.9	7.9	0
	300	1.2	2.4	2.4	2.4	2.4	2.4	0	0	0
No	200	1.6	1.6	1.6	1.6	1.6	1.6	0	0	0
charge	100	0	1.7	1.7	0.4	0.8	0.4	0	0	0
	50	0	1.7	1.7	0	0.4	0	0.2	0.2	0
	300	15.0	30.0	30.0	22.5	17.4	22.5	2.4	2.4	1.2
3rd	200	0	13.4	13.4	11.6	0	11.6	11.6	11.6	0
cycle	100	0	19.2	19.2	19.2	0	19.2	23.3	23.3	0
	50	0	10.8	10.8	14.2	0	12.9	14.6	17.1	0

Battery		34			35			36			TOTAL	
Cell		1 U	2 T.	3 U.	1 T.	2 U.	3 T.	1 U.	2 T.	3 U.	T	U.
	Rate											
	300	1.2	2.4	2.4	42.6	42.6	42.6	39.9	39.9	39.9	218.7	207.3
1st	200	0	1.6	1.6	8.4	8.4	8.4	3.4	0	3.4	26.6	26.6
cycle	100	0	5.0	5.0	16.7	16.7	16.7	6.7	5.8	6.7	80.8	67.6
	50	0	20.0	19.2	21.6	22.1	22.1	16.7	17.5	17.5	111.2	105.5
	300	1.2	2.4	2.4	47.4	47.4	47.4	50.1	50.1	50.1	243.3	238.5
2nd	200	0	1.6	1.6	3.4	3.4	1.6	3.4	3.4	3.4	21.8	27.0
cycle	100	0	9.2	9.2	12.5	15.0	5.8	8.3	8.3	8.3	70.0	75.0
	50	0	15.4	15.4	20.8	17.5	20.8	18.4	18.4	18.3	102.1	98.0
	300	0	0.	0.	2.4	2.4	2.4	5.1	5.1	5.1	15.9	19.8
No	200	0	0.	0.	0	1.6	1.6	1.6	1.6	1.6	8.0	9.6
charge	100	0	0.8	0.8	1.3	1.7	1.7	1.7	1.7	1.7	8.0	8.4
	50	0	2.9	2.9	1.5	2.1	2.1	2.3	2.5	2.5	11.3	11.7
	300	0	0.	0.	32.4	39.9	39.9	52.5	52.5	52.5	190.8	222.3
3rd	200	0	0.	0.	0	11.6	11.6	5.0	5.0	5.0	41.6	69.8
cycle	100	0	0.8	0.8	5.0	16.7	16.7	10.0	13.3	13.3	78.3	121.7
	50	0	1.2	0.8	0	17.1	17.1	24.2	29.2	29.2	72.9	126.3

APPENDIX 3d (Sheet 9)

Watt hours obtained for discarded batteries at each stage in cycle of successive discharges at 300, 200, 100 and 50 amperes and after an overnight stand and after a 7-day overcharge.

Battery		1			3			4		
Cell		1 T	2 U	3 T	1 U	2 T	3 U	1 T	2 U	3 T
	Rate	Watt hours								
1st Cycle	300	59.3	61.1	55.4	0.0	0.0	0.0	39.7	48.9	48.9
	200	4.8	2.6	0.0	1.0	10.4	1.0	0.0	16.6	12.2
	100	4.6	7.4	2.9	2.3	2.4	2.0	0.0	13.2	12.7
	50	9.7	17.7	3.6	4.1	3.0	3.0	2.2	3.2	2.9
2nd Cycle	300	55.5	56.9	53.7	0.0	0.0	0.0	33.1	40.8	40.8
	200	1.6	2.7	0.0	1.4	1.2	1.1	0.0	22.8	24.2
	100	2.6	8.8	0.0	3.9	3.3	3.3	0.0	5.4	10.8
	50	1.3	8.4	0.5	3.7	2.7	3.2	2.4	4.8	9.5
No Charge Cycle	300	6.4	7.8	5.8	0.0	0.0	0.0	2.9	3.5	3.7
	200	0.5	2.4	0.2	0.0	0.0	0.0	0.0	4.8	5.3
	100	0.0	1.3	0.0	0.5	0.2	0.3	0.0	2.8	4.0
	50	0.0	0.7	0.0	1.1	0.2	1.1	0.0	0.0	1.4
3rd Cycle	300	82.4	78.2	83.0	0.0	0.0	0.0	2.1	8.7	7.9
	200	9.0	2.4	9.0	0.0	0.0	0.0	0.0	11.7	10.9
	100	21.5	1.9	22.4	0.4	0.3	0.4	0.0	108.2	99.7
	50	8.8	0.7	14.0	0.6	0.7	0.7	0.0	21.9	12.9

Battery		5			6			7			Total	
Cell		1 U	2 T	3 U	1 T	2 U	3 T	1 U	2 T	3 U	T	U
	Rate	Watt hours										
1st Cycle	300	52.6	55.1	54.8	0.5	3.6	2.9	38.1	39.5	37.8	301.3	296.9
	200	0.0	5.2	2.8	0.0	2.4	1.8	9.1	10.2	9.4	50.6	46.9
	100	1.0	14.1	10.0	0.0	13.4	10.6	5.5	4.4	3.3	51.7	58.1
	50	0.0	7.3	1.5	0.0	27.2	20.0	12.0	3.2	4.6	51.9	73.3
2nd Cycle	300	48.0	55.1	55.1	0.0	0.0	0.0	37.3	38.9	38.4	277.1	276.5
	200	0.0	2.4	1.6	0.0	0.0	0.0	5.2	5.6	5.4	35.0	40.2
	100	0.0	12.5	8.2	0.0	0.0	0.0	8.8	6.5	8.4	35.7	46.8
	50	0.0	7.3	2.5	0.0	30.3	27.6	9.2	1.2	4.8	52.5	66.9
No Charge Cycle	300	3.1	3.6	3.5	0.0	0.0	0.0	5.6	5.5	6.0	27.9	29.5
	200	0.0	2.6	2.1	0.0	0.0	0.0	2.2	9.0	2.7	17.6	14.2
	100	0.0	2.8	1.3	0.0	0.0	0.0	2.6	0.6	3.4	7.6	12.2
	50	0.0	1.4	0.0	0.0	0.7	0.0	0.4	0.0	1.1	3.0	5.1
3rd Cycle	300	21.6	20.4	27.3	0.0	0.0	0.0	7.5	55.5	43.9	259.3	187.2
	200	6.4	31.2	29.2	0.1	2.1	1.1	0.0	2.1	1.8	63.4	53.6
	100	0.0	43.4	43.4	0.0	2.3	1.2	0.0	10.9	8.0	199.4	164.6
	50	0.0	10.4	12.1	0.0	5.6	1.7	0.0	13.0	5.7	61.5	47.3

APPENDIX 3d (Sheet 10)

Watt hours obtained for discarded batteries at each stage in 3 cycles of successive discharges at 300, 200, 100 and 50-amperes. Also after an overnight stand and a 7-day overcharge.

BATTERY		10			12			13		
Cell No.		1	2	3	1	2	3	1	2	3
	Rate	T	U	T	U	T	U	T	U	T
1st. Cycle	300	49.1	37.4	42.6	69.3	59.0	69.3	52.5	52.1	54.8
	200	16.6	5.3	10.1	6.2	0.0	4.6	0.0	5.3	6.4
	100	22.2	10.7	14.7	9.4	0.4	7.7	0.0	6.6	9.0
	50	8.4	10.4	9.4	9.0	4.0	9.8	1.2	5.0	4.7
2nd. Cycle	300	49.1	37.4	41.9	63.6	51.6	64.4	49.7	48.3	51.1
	200	18.6	6.0	10.4	16.1	0.0	15.0	0.0	5.2	6.4
	100	17.6	10.7	12.2	6.5	1.6	7.4	0.0	5.6	9.0
	50	3.9	11.4	7.4	2.8	4.5	7.2	0.3	2.8	3.5
No charge Cycle	300	3.0	1.0	2.0	7.1	6.1	6.1	6.5	6.4	6.9
	200	2.0	0.1	1.0	2.1	0.2	1.0	0.0	0.0	0.0
	100	4.8	0.5	2.6	5.1	0.0	2.1	0.0	7.3	10.2
	50	1.9	0.1	1.0	5.5	0.0	1.1	0.0	0.2	1.6
3rd. Cycle	300	7.7	3.2	5.9	4.0	0.9	4.2	0.6	0.5	0.3
	200	2.8	0.0	0.9	8.4	0.0	8.1	2.0	1.4	0.1
	100	10.2	0.0	2.2	7.3	0.0	8.4	6.7	2.4	0.0
	50	35.0	0.0	1.2	20.2	0.0	32.2	8.8	1.2	0.1

APPENDIX 3d (Sheet 11)

Watt hours obtained for discarded batteries at each stage in 3 cycles of successive discharges at 300, 200, 100 and 50-amperes. Also after an overnight stand and a 7-day overcharge.

BATTERY		17			18			19		
Cell No.		1	2	3	1	2	3	1	2	3
	Rate	U	T	U	T	U	T	U	T	U
1st. Cycle	300	47.3	49.7	53.6	31.4	32.5	42.4	66.7	62.9	66.7
	200	9.9	12.3	15.8	6.7	5.4	15.3	12.1	6.3	12.0
	100	11.6	11.5	12.7	16.7	11.2	34.4	14.6	0.3	11.9
	50	8.9	6.1	3.0	9.6	5.6	18.0	9.9	3.9	5.5
2nd. Cycle	300	49.2	53.2	60.4	30.0	29.2	42.4	67.2	56.2	67.2
	200	3.6	4.3	9.7	5.2	2.9	15.2	13.3	0.0	12.6
	100	7.2	4.4	9.0	13.7	8.6	32.9	7.4	0.0	5.6
	50	7.7	4.0	5.4	5.0	5.5	13.6	6.0	3.0	2.5
No charge Cycle	300	4.8	5.5	6.1	0.3	0.3	0.6	6.9	5.8	6.8
	200	0.9	2.3	3.1	0.7	0.2	1.9	4.3	0.0	4.0
	100	1.2	1.8	3.1	1.8	0.2	5.1	3.5	0.0	2.8
	50	0.2	0.6	1.4	1.5	0.0	4.6	2.2	0.0	1.3
3rd. Cycle	300	1.9	2.0	3.9	1.5	1.8	3.5	15.8	12.4	17.9
	200	0.0	1.1	2.8	0.0	0.4	2.6	5.0	0.0	7.0
	100	0.0	2.2	12.1	0.0	0.5	8.2	13.2	0.2	21.8
	50	0.0	0.8	5.1	0.0	0.1	23.9	8.2	0.0	21.0

Total	300		200		100		50	
	T	U	T	U	T	U	T	U
Cycle 1	444.4	494.9	73.7	76.6	109.2	96.4	65.3	67.1
Cycle 2	425.2	486.9	60.1	84.4	91.4	68.0	45.2	51.3
No Charge	36.7	45.5	8.1	15.7	26.3	25.8	11.2	12.0
Cycle 3	34.8	53.2	9.5	33.7	29.7	65.7	69.8	88.0

APPENDIX 3d (Sheet 12)

Watt hours obtained for discarded batteries at each stage in cycle of successive discharges at 300, 200, 100, and 50 amperes and after an overnight stand and after a 7-day overcharge.

Battery		31			32			33		
Cell		1	2	3	1	2	3	1	2	3
		T	U	T	U	T	U	T	U	T
	Rate									
	300	37.3	51.9	55.1	25.4	25.9	26.8	33.1	1.4	0
1st	200	0	4.4	7.4	0.8	1.4	0.8	2.3	2.5	0
cycle	100	1.5	14.7	25.9	4.4	6.0	2.5	9.9	9.7	0
	50	0.	10.8	17.4	0.2	6.3	2.7	16.3	15.0	0
	300	42.1	55.1	57.6	31.1	32.4	34.1	3.4	3.6	0.4
2nd	200	0	4.9	7.7	2.1	3.3	2.9	5.3	5.3	0
cycle	100	0.7	14.2	24.0	4.2	7.0	2.9	15.7	15.1	0
	50	0	11.1	20.1	2.2	5.6	0.5	13.9	11.5	0
	300	0.7	3.1	3.4	2.4	2.5	2.5	0	0	0
No	200	0	1.8	2.3	1.0	1.4	1.2	0.	0.	0
charge	100	0	1.7	2.5	0	0.9	0	0	0	0
	50	0.	1.6	2.5	0.	0.5	0.	0.4	0.3	0.
	300	15.8	49.8	50.1	31.2	15.8	30.2	3.1	3.9	0.1
3rd	200	0	21.3	21.7	15.0	0	12.2	15.5	19.3	0
cycle	100	0	29.2	31.1	25.3	0	16.9	27.5	39.4	0
	50	0	12.8	16.5	16.1	0	7.0	8.8	27.4	0

Battery		34			35			36			TOTAL	
Cell		1	2	3	1	2	3	1	2	3		
		U	T.	U.	T.	U.	T.	U.	T.	U.	T.	U
	Rate											
	300	0.4	3.0	2.7	55.4	65.2	62.2	61.4	35.1	60.2	327.1	295.4
1st	200	0	2.3	1.7	4.0	11.2	5.4	2.9	0.	4.0	22.8	28.3
cycle	100	0	8.0	6.3	10.5	20.9	9.2	7.5	3.7	9.8	74.7	75.8
	50	0.	32.0	15.7	14.7	18.6	17.7	22.6	8.4	27.3	112.8	112.9
	300	0.4	3.1	2.7	67.8	75.4	72.0	75.7	72.1	75.6	350.9	353.7
2nd	200	0	2.1	1.7	1.9	5.0	0.6	1.5	1.3	3.3	22.2	26.7
cycle	100	0	14.6	10.2	9.0	23.9	2.1	8.6	6.5	11.2	79.0	90.3
	50	0	24.0	11.1	12.1	20.3	15.0	8.1	11.4	24.2	102.1	89.0
	300	0	0.	0.	2.0	2.8	2.5	6.2	5.6	5.6	16.7	22.6
No	200	0	0.	0.	0.	1.3	1.4	9.3	9.6	6.4	14.7	21.0
charge	100	0	1.2	0.9	0.2	1.7	1.7	1.2	1.4	1.0	7.9	6.5
	50	0	4.6	2.7	0.3	2.4	1.6	0.9	1.7	1.8	11.6	9.7
	300	0	0.	0.	40.2	61.8	60.2	73.0	77.2	74.6	262.5	324.5
3rd	200	0	0	0.	0	15.9	10.6	1.2	5.0	4.1	52.8	89.0
cycle	100	0	1.0	0.2	0.8	22.2	12.7	4.2	13.8	14.0	86.9	151.4
	50	0	1.9	0.1	0	17.8	12.0	18.4	19.2	19.8	58.4	119.4

APPENDIX 4: New Batteries

a. Laboratory data pertaining to tests of new automotive batteries.

b. The ampere-hour and watt-hour output for each cell, for all discharges at all rates.

APPENDIX-4a

VOLTAGES ON PRE-TEST CHARGE FOR NEW BATTERIES

Battery		21			22			23		
Cell		1	2	3	1	2	3	1	2	3
Time	Rate									
4/14/52										
10:00 AM	0 OCV	2.07	2.06	2.07	2.07	2.07	2.07	2.07	2.08	2.07
10:30 AM	5	2.32	2.32	2.32	2.30	2.33	2.29	2.33	2.37	2.32
12:15 PM	5	2.34	2.35	2.35	2.33	2.37	2.34	2.37	2.41	2.33
2:00 PM	5	2.51	2.49	2.50	2.55	2.57	2.55	2.57	2.57	2.57
4:30 PM	5	2.59	2.58	2.58	2.57	2.59	2.58	2.59	2.60	2.54
6:45 PM	5	2.61	2.59	2.60	2.59	2.61	2.60	2.60	2.59	2.54
7:45 PM	5	2.63	2.60	2.62	2.61	2.62	2.61	2.61	2.60	2.55
8:45 PM	5	2.63	2.61	2.62	2.62	2.62	2.62	2.61	2.60	2.55
9:00 PM	0	OFF CHARGE - ALL CELLS								
		SPECIFIC GRAVITIES DURING PRE-TEST CHARGE								
10:00 AM		1.240	1.235	1.240	1.240	1.240	1.240	1.245	1.250	1.245
12:15 PM		1.245	1.240	1.245	1.245	1.245	1.245	1.250	1.255	1.250
2:00 PM		1.255	1.250	1.255	1.255	1.255	1.255	1.260	1.265	1.260
4:30 PM		1.260	1.260	1.265	1.260	1.260	1.260	1.270	1.270	1.265
6:45 PM		1.265	1.260	1.265	1.265	1.265	1.265	1.270	1.270	1.265
7:45 PM		1.265	1.265	1.265	1.265	1.265	1.265	1.270	1.270	1.265
8:45 PM		1.265	1.265	1.265	1.265	1.265	1.265	1.270	1.270	1.265
*		PRE-TEST DISCHARGE AT 300 AMPERES: VOLTAGES								
4/14/52		DISCHARGE AT 300 AMPS.								
9:25 PM		2.18	2.17	2.18	2.14	2.14	2.14	2.14	2.14	2.14
5 sec.		1.69	1.68	1.69	1.69	1.67	1.67	1.71	1.68	1.71
30 sec.		1.69	1.68	1.68	1.70	1.67	1.67	1.71	1.68	1.71
1 min.		1.68	1.67	1.67	1.68	1.65	1.66	1.70	1.67	1.70
1½ min.		1.67	1.65	1.66	1.67	1.64	1.65	1.68	1.65	1.68
		RECOVERY VOLTAGES								
2 min.		2.07	2.06	2.07	2.07	2.06	2.06	2.07	2.07	2.07
2½ min.		2.08	2.08	2.08	2.08	2.08	2.08	2.08	2.08	2.08
3 min.		2.09	2.09	2.09	2.09	2.09	2.09	2.09	2.09	2.09
3½ min.		2.09	2.09	2.10	2.10	2.10	2.10	2.09	2.10	2.09
4 min.		2.10	2.09	2.10	2.10	2.10	2.10	2.10	2.10	2.09
4½ min.		2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10
5 min.		2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10
*Sp.Gr.after 20 Minutes.		1.250	1.245	1.245	1.250	1.245	1.250	1.255	1.255	1.250

APPENDIX 4a (Sheet 2)

VOLTAGES ON PRE-TEST CHARGE FOR NEW BATTERIES

Battery		24			25			26		
Cell		1	2	3	1	2	3	1	2	3
Time	Rate									
4/14/52										
10:00 AM	0 OCV	2.07	2.06	2.06	2.06	2.07	2.07	2.06	2.06	2.06
10:30 AM	5	2.28	2.28	2.30	2.30	2.31	2.32	2.29	2.31	2.28
12:15 PM	5	2.34	2.36	2.38	2.35	2.36	2.37	2.36	2.33	2.34
2:00 PM	5	2.54	2.55	2.55	2.55	2.57	2.57	2.56	2.57	2.57
4:30 PM	5	2.56	2.57	2.58	2.57	2.60	2.59	2.58	2.59	2.58
6:45 PM	5	2.57	2.59	2.61	2.60	2.62	2.62	2.60	2.61	2.61
7:45 PM	5	2.59	2.59	2.62	2.61	2.62	2.63	2.61	2.61	2.62
8:45 PM	5	2.60	2.60	2.62	2.62	2.62	2.63	2.62	2.62	2.62
9:00 PM	0	OFF CHARGE - ALL CELLS								
		SPECIFIC GRAVITIES DURING PRE-TEST CHARGE								
10:00 AM		1.230	1.225	1.225	1.230	1.230	1.230	1.225	1.225	1.225
12:15 PM		1.235	1.230	1.230	1.235	1.235	1.235	1.230	1.230	1.230
2:00 PM		1.245	1.240	1.240	1.245	1.245	1.245	1.240	1.240	1.240
4:30 PM		1.255	1.250	1.245	1.255	1.255	1.255	1.250	1.250	1.250
6:45 PM		1.260	1.250	1.250	1.255	1.260	1.265	1.255	1.255	1.255
7:45 PM		1.260	1.250	1.250	1.260	1.260	1.265	1.255	1.255	1.255
8:45 PM		1.260	1.250	1.250	1.260	1.260	1.265	1.255	1.255	1.255
		PRE-TEST DISCHARGE AT 300 AMPERES: VOLTAGES								
4/14/52		DISCHARGE AT 300 AMPS.								
2:25 PM		2.13	2.11	2.11	2.12	2.11	2.12	2.12	2.11	2.11
[illegible] sec.		1.68	1.66	1.68	1.68	1.66	1.67	1.69	1.68	1.66
30 sec.		1.69	1.66	1.68	1.68	1.66	1.68	1.69	1.68	1.66
1 min.		1.68	1.65	1.67	1.67	1.65	1.66	1.68	1.67	1.65
1½ min.		1.67	1.64	1.66	1.66	1.64	1.65	1.67	1.66	1.64
		RECOVERY VOLTAGES								
2 min.		2.06	2.06	2.06	2.06	2.06	2.06	2.06	2.06	2.06
2½ min.		2.08	2.07	2.07	2.07	2.07	2.07	2.07	2.07	2.07
3 min.		2.08	2.07	2.07	2.08	2.08	2.08	2.08	2.08	2.07
3½ min.		2.09	2.08	2.08	2.09	2.08	2.09	2.08	2.08	2.08
4 min.		2.09	2.08	2.08	2.09	2.09	2.09	2.09	2.09	2.08
4½ min.		2.10	2.08	2.08	2.09	2.09	2.09	2.09	2.09	2.09
5 min.		2.10	2.08	2.08	2.09	2.09	2.09	2.09	2.09	2.09
20 min.sp.gr.		1.245	1.230	1.230	1.245	1.240	1.245	1.235	1.235	1.235

APPENDIX 4a (Sheet 3)

Voltages on Charge for New Batteries/ Cycle #1

Battery No.		21			22			23		
Time	Rate	1 T	2 U	3 T	1 U	2 T	3 U	1 T	2 U	3 T
4/14/52										
11:25 PM(OCV)	0	2.12	2.11	2.12	2.11	2.11	2.11	2.12	2.12	2.12
11:30	5				ON CHARGE					
11:40	5	2.18	2.18	2.19	2.18	2.18	2.18	2.19	2.19	2.19
12:00	5				OFF CHARGE					
4/15/52										
8:30 AM	5	2.19	2.18	2.19	2.18	2.18	2.18	2.19	2.19	2.19
11:15	5	2.69	2.67	2.69	2.68	2.68	2.68	2.68	2.67	2.64
12:15	5	2.68	2.66	2.68	2.67	2.67	2.67	2.67	2.66	2.62
1:30					OFF CHARGE					

Specific Gravities During Charge/ Cycle #1

4/15/52									
9:00 AM	1.255	1.250	1.255	1.250	1.250	1.245	1.255	1.255	1.260
10:45	1.265	1.255	1.270	1.260	1.270	1.265	1.270	1.270	1.270
11:15	1.275	1.270	1.275	1.275	1.275	1.270	1.275	1.275	1.275
12:15	1.275	1.265	1.270	1.270	1.275	1.270	1.275	1.270	1.275

APPENDIX 4a (Sheet 4)

Voltages on Charge for New Batteries/ Cycle #1

(Cont'd)

Battery No.		24			25			26		
Time	Rate	1 U	2 T	3 U	1 T	2 U	3 T	1 U	2 T	3 U
4/14/52										
11:25 PM(OCV)	0	2.11	2.10	2.10	2.11	2.11	2.12	2.10	2.11	2.10
11:30	5			ON CHARGE						
11:40	5	2.18	2.17	2.16	2.18	2.17	2.18	2.17	2.17	2.17
12:00	5			OFF CHARGE						
4/15/52										
8:30 AM	5	2.17	2.17	2.17	2.18	2.18	2.19	2.18	2.18	2.17
11:15	5	2.67	2.66	2.68	2.68	2.68	2.70	2.67	2.68	2.68
12:15	5	2.66	2.65	2.67	2.67	2.68	2.69	2.66	2.67	2.67
12:30				OFF CHARGE						

Specific Gravities During Charge/ Cycle #1

4/15/52									
9:00 AM	1.240	1.235	1.235	1.240	1.240	1.255	1.235	1.240	1.245
10:45	1.255	1.255	1.250	1.255	1.250	1.265	1.245	1.255	1.250
11:15	1.265	1.265	1.255	1.265	1.265	1.270	1.265	1.260	1.260
12:15	1.265	1.265	1.255	1.265	1.265	1.270	1.260	1.260	1.255

APPENDIX 4a (Sheet 5) Discharge Voltages for New Batteries/ Cycle #1

Battery No.	21			22				23			
4/15/52				Discharge at 300 Amperes							
	1	2	3		1	2	3		1	2	3
Time	T	U	T	Time	U	T	U	Time	T	U	T
OCV	2.16	2.15	2.16	OCV	2.13	2.13	2.13	OCV	2.13	2.13	2.13
0:05	1.71	1.70	1.71	0:05	1.68	1.66	1.66	0:05	1.71	1.69	1.68
0:30	1.70	1.69	1.70	0:30	1.68	1.66	1.66	0:30	1.71	1.69	1.69
1:00	1.68	1.67	1.67	1:00	1.67	1.64	1.65	1:00	1.68	1.66	1.66
2:00	1.65	1.64	1.64	2:00	1.64	1.61	1.62	2:00	1.66	1.63	1.63
3:00	1.61	1.60	1.60	3:00	1.61	1.58	1.58	3:00	1.62	1.58	1.60
4:00	1.58	1.56	1.54	4:00	1.58	1.54	1.55	4:00	1.58	1.54	1.55
5:00	1.52	1.52	1.48	5:00	1.53	1.48	1.50	5:00	1.56	1.49	1.50
6:00	1.44	1.46	1.33	6:00	1.48	1.41	1.43	6:00	1.47	1.34	1.42
7:00	0.60	1.50	R	7:00	1.38	1.08	0.80	7:00	1.38	R	1.30
				7:30	1.36	0.84	R				
				Discharge at 200 Amperes							
7:30	0.02	1.58	R	8:00	1.38	0.44	R	7:30	1.44	--	1.38
								8:00	1.30	R	1.05
				Discharge at 100 Amperes							
8:00	0.34	1.70	0.13	8:30	1.66	1.24	0.10	8:30	1.63	0.04	1.60
9:00	0.23	1.71	0.12	9:00	1.67	1.54	0.12	9:00	1.64	R	1.62
10:00	0.12	1.72	0.05	10:00	1.68	1.54	0.04	10:00	1.63	R	1.62
11:00	0.07	1.70	0.00	11:00	1.66	1.44	R	11:00	1.54	R	1.58
12:00	0.00	1.68	R	12:00	1.56	0.84	R	12:00	0.58	R	1.50
13:00	R	1.66	R	12:30	1.12	0.48	R	13:00	0.10	R	0.86
14:00	R	1.64	R								
15:00	R	1.56	R								
16:00	R	1.32	R								
				Discharge at 50 Amperes							
17:00	0.64	1.65	0.58	13:00	1.22	1.11	1.00	13:30	1.00	0.60	1.70
18:00	0.58	1.70	0.60	14:00	1.74	1.56	1.18	14:00	1.04	0.68	1.72
19:00	0.47	1.68	0.50	15:00	1.74	1.68	1.40	15:00	1.02	0.72	1.71
20:00	0.36	1.66	0.40	16:00	1.72	1.67	1.68	16:00	1.03	0.73	1.72
21:00	0.28	1.64	0.34	17:00	1.67	1.63	1.72	17:00	1.03	0.72	1.70
22:00	0.20	1.56	0.26	18:00	1.50	1.52	1.74	18:00	1.02	0.72	1.67
23:00	0.15	1.28	0.23	19:00	0.94	1.18	1.73	19:00	1.01	0.72	1.63
24:00	0.10	0.82	0.16	20:00	0.71	0.92	1.61	20:00	1.00	0.66	1.48
25:00	0.05	0.62	0.08	21:00	0.60	0.82	0.65	21:00	0.88	0.62	1.18
				22:00	0.52	0.71	0.02	22:00	0.83	0.60	0.98
				23:00	0.38	0.60	R	23:00	0.76	0.55	0.80
				24:00	0.20	0.54	R	24:00	0.70	0.52	0.68
								25:00	0.59	0.42	0.53
								26:00	0.56	0.42	0.45
								27:00	0.48	0.36	0.40

APPENDIX 4a (Sheet 6)

Discharge Voltages for New Batteries/ Cycle #1

(Cont'd)

Battery No.	24			25				26			
4/15/52				Discharge at 300 Amperes							
Time	1 U	2 T	3 U	Time	1 T	2 U	3 T	Time	1 U	2 T	3 U
OCV	2.12	2.08	2.10	OCV	2.12	2.11	2.12	OCV	2.10	2.10	2.10
0:05	1.69	1.64	1.62	0:05	1.67	1.67	1.66	0:05	1.68	1.68	1.60
0:30	1.69	1.65	1.60	0:30	1.68	1.66	1.66	0:30	1.69	1.67	1.58
1:00	1.68	1.63	1.57	1:00	1.66	1.64	1.63	1:00	1.67	1.66	1.58
2:00	1.65	1.60	1.53	2:00	1.64	1.62	1.60	2:00	1.65	1.63	1.55
3:00	1.62	1.56	1.50	3:00	1.61	1.59	1.57	3:00	1.62	1.60	1.52
4:00	1.59	1.52	1.45	4:00	1.56	1.54	1.52	4:00	1.58	1.56	1.48
5:00	1.54	1.47	1.40	5:00	1.51	1.51	1.47	5:00	1.54	1.51	1.44
6:00	1.48	1.39	1.33	6:00	1.42	1.45	1.33	6:00	1.49	1.45	1.38
7:00	1.38	1.04	1.02	6:30	0.66	1.40	1.04	7:00	1.38	1.27	1.26
7:30	1.34	0.18	0.24					7:30	1.29	0.74	1.20
				Discharge at 200 Amperes							
8:00	1.43	R	R	7:00	0.03	1.61	0.36	8:00	1.44	0.20	1.32
								8:30	1.38	R	1.25
				Discharge at 100 Amperes							
8:30	1.67	0.64	0.61	7:30	0.42	1.76	0.84	9:00	1.63	0.10	1.56
9:00	1.68	0.51	0.39	8:00	0.35	1.75	0.65	10:00	1.64	R	1.58
10:00	1.68	0.27	0.16	9:00	0.22	1.74	0.40	11:00	1.64	R	1.57
11:00	1.68	0.15	0.02	10:00	0.07	1.74	0.26	12:00	1.62	R	1.54
12:00	1.67	0.00	R	11:00	R	1.73	0.14	13:00	1.56	R	1.45
13:00	1.63	R	R	12:00	R	1.72	R	14:00	1.20	R	0.88
14:00	1.53	R	R	12:30	R	1.72	R				
14:30	1.50	R	R								
				Discharge at 50 Amperes							
15:00	1.69	0.74	0.83	13:00	0.87	1.82	0.88	14:30	1.24	0.40	1.34
16:00	1.71	0.90	1.00	14:00	1.00	1.82	0.91	15:00	1.70	0.78	1.64
17:00	1.73	1.00	1.12	15:00	1.02	1.82	0.85	16:00	1.74	0.84	1.67
18:00	1.73	1.04	1.21	16:00	0.94	1.82	0.74	17:00	1.73	0.86	1.68
19:00	1.71	1.05	1.44	17:00	0.83	1.82	0.64	18:00	1.74	0.87	1.69
20:00	1.70	1.08	1.68	18:00	0.74	1.82	0.51	19:00	1.74	0.80	1.70
21:00	1.66	1.10	1.72	19:00	0.62	1.82	0.36	20:00	1.74	0.60	1.70
22:00	1.58	1.10	1.74	20:00	0.58	1.83	0.30	21:00	1.73	0.58	1.68
23:00	1.40	1.10	1.72	21:00	0.47	1.82	0.16	22:00	1.73	0.58	1.68
24:00	1.06	1.09	1.72	22:00	0.40	1.82	0.14	23:00	1.72	0.58	1.67
25:00	0.74	1.03	1.70	23:00	0.30	1.82	0.07	24:00	1.71	0.56	1.66
26:00	0.52	0.98	1.68	24:00	0.24	1.81	0.04	25:00	1.69	0.54	1.63
27:00	0.38	0.92	1.62	25:00	0.16	1.80	R	26:00	1.67	0.54	1.60
28:00	0.28	0.88	1.50	26:00	0.08	1.79	R	27:00	1.62	0.52	1.50
29:00	0.20	0.84	0.80	27:00	0.06	1.79	R	28:00	1.45	0.60	0.75
30:00	0.14	0.80	0.40	28:00	R	1.77	R	29:00	0.72	0.76	0.44
				29:00	R	1.76	R				
				30:00	R	1.74	R				
				31:00	R	1.72	R				

APPENDIX 4a (Sheet 7)

Voltages on Charge for New Batteries/ Cycle #2

Battery No.		21			22			23		
Time	Rate	1 T	2 U	3 T	1 U	2 T	3 U	1 T	2 U	3 T
4/15/52										
9:15 PM(OCV)	0	2.02	2.02	2.02	2.03	2.03	2.03	2.02	2.02	2.02
9:20	5				ON CHARGE					
9:40	5	2.10	2.09	2.10	2.10	2.10	2.10	2.09	2.09	2.09
11:20	5	2.13	2.12	2.13	2.13	2.13	2.13	2.12	2.13	2.12
4/16/52										
8:45 AM	5	2.52	2.54	2.53	2.58	2.59	2.55	2.55	2.52	2.52
9:50	5	2.56	2.59	2.57	2.60	2.61	2.57	2.58	2.55	2.55
10:45	5	2.57	2.60	2.58	2.61	2.62	2.58	2.60	2.56	2.56
11:50	5	2.57	2.60	2.58	2.61	2.62	2.58	2.60	2.56	2.56
12:00 Noon	0				OFF CHARGE					

Specific Gravities During Charge/ Cycle #2

4/15/52									
11:20 PM	1.165	1.160	1.170	1.170	1.170	1.170	1.170	1.160	1.165
4/16/52									
8:45 AM	1.270	1.265	1.275	1.270	1.275	1.275	1.275	1.270	1.270
9:50	1.275	1.270	1.275	1.270	1.275	1.265	1.275	1.275	1.275
10:45	1.280	1.270	1.280	1.270	1.275	1.270	1.280	1.280	1.280
11:50	1.280	1.270	1.280	1.270	1.275	1.270	1.275	1.280	1.275

APPENDIX 4a (Sheet 8)

Voltages on Charge for New Batteries/ Cycle #2

(Cont'd)

Battery No.		24			25			26		
Time	Rate	1 U	2 T	3 U	1 T	2 U	3 T	1 U	2 T	3 U
4/15/52										
9:15 PM (OCV)	0	2.01	2.00	2.00	2.01	2.01	2.01	2.00	2.00	2.00
9:20	5	ON CHARGE								
9:40	5	2.06	2.06	2.06	2.06	2.06	2.07	2.05	2.05	2.05
11:20	5	2.10	2.10	2.10	2.10	2.10	2.11	2.09	2.09	2.09
4/16/52										
8:45 AM	5	2.47	2.46	2.47	2.48	2.60	2.49	2.44	2.44	2.44
9:50	5	2.56	2.54	2.55	2.54	2.65	2.54	2.59	2.54	2.60
10:45	5	2.60	2.58	2.60	2.57	2.67	2.57	2.64	2.58	2.64
11:50	5	2.61	2.58	2.60	2.57	2.67	2.57	2.65	2.59	2.65
12:00 Noon	0	OFF CHARGE								

Specific Gravities During Charge/ Cycle #2

(Cont'd)

4/15/52									
11:20 PM	1.150	1.140	1.145	1.140	1.140	1.150	1.135	1.140	1.135
4/16/52									
8:45 AM	1.235	1.225	1.215	1.240	1.250	1.250	1.215	1.210	1.210
9:50	1.265	1.260	1.255	1.265	1.260	1.275	1.250	1.250	1.250
10:45	1.270	1.265	1.260	1.265	1.265	1.270	1.260	1.265	1.265
11:50	1.270	1.265	1.260	1.265	1.260	1.270	1.260	1.265	1.260

APPENDIX 4a (Sheet 9)

Discharge Voltages for New Batteries/ Cycle #2

Battery No.	21			22				23			
4/16/52				Discharge at 300 Amperes							
	1	2	3		1	2	3		1	2	3
Time	T	U	T	Time	U	T	U	Time	T	U	T
OCV	2.15	2.14	2.15	OCV	2.13	2.13	2.13	OCV	2.13	2.13	2.13
5"	1.69	1.68	1.68	5"	1.69	1.67	1.67	5"	1.70	1.68	1.70
30"	1.70	1.70	1.68	30"	1.70	1.68	1.68	30"	1.71	1.68	1.70
1'	1.69	1.68	1.67	1'	1.69	1.66	1.66	1'	1.70	1.67	1.69
2'	1.66	1.65	1.64	2'	1.66	1.64	1.64	2'	1.67	1.64	1.65
3'	1.63	1.63	1.61	3'	1.64	1.60	1.61	3'	1.64	1.60	1.62
4'	1.59	1.60	1.56	4'	1.60	1.56	1.57	4'	1.61	1.56	1.58
5'	1.53	1.55	1.50	5'	1.57	1.51	1.53	5'	1.56	1.50	1.53
6'	1.43	1.49	0.95	6'	1.52	1.44	1.46	6'	1.50	1.31	1.47
6'30"	1.40	1.48	0.00	7'	1.42	1.26	1.16	6'30"	1.46	0.20	1.44
				7'30"	1.40	1.16	R				
				Discharge at 200 Amperes							
7'	1.18	1.62	R	8'	1.51	1.15	R	7'	1.58	R	1.54
								7'30"	1.55	R	1.50
								8'	1.52	R	1.46
				Discharge at 100 Amperes							
7'30"	1.14	1.76	0.22	8'30"	1.70	1.57	0.12	8'30"	1.70	0.04	1.68
8'	0.85	1.77	0.16	9'	1.71	1.60	0.08	9'	1.71	R	1.69
9'	0.38	1.76	0.00	10'	1.71	1.58	R	10'	1.71	R	1.69
10'	0.12	1.76	R	11'	1.70	1.50	R	11'	1.69	R	1.68
11'	R	1.76	R	12'	1.66	1.10	R	12'	1.66	R	1.66
				13'	1.46	0.48	R	13'	1.56	R	1.62
				13'30"	0.90	0.35	R	14'	0.60	R	1.54
								15'	0.00	R	1.32
				Discharge at 50 Amperes							
11'30"	0.72	1.84	0.45	14'	1.62	0.92	0.85	15'30"	0.56	0.64	1.64
12'	0.78	1.85	0.36	15'	1.70	1.20	0.96	16'	0.68	0.62	1.68
13'	0.72	1.86	0.11	16'	1.64	1.36	0.88	17'	0.68	0.60	1.67
14'	0.60	1.86	0.04	17'	1.46	1.36	0.80	18'	0.67	0.58	1.66
15'	0.42	1.86	0.00	18'	0.90	1.02	0.72	19'	0.65	0.55	1.58
16'	0.05	1.86	R	19'	0.68	0.83	0.66	20'	0.62	0.52	1.42
17'	R	1.86	R	20'	0.52	0.72	0.60	21'	0.58	0.49	1.18
18'	R	1.85	R	21'	0.40	0.64	0.52	22'	0.53	0.46	0.90
19'	R	1.85	R	22'	0.27	0.59	0.48	23'	0.46	0.42	0.66
20'	R	1.84	R	23'	0.06	0.52	0.40	24'	0.40	0.41	0.52
21'	R	1.84	R								
22'	R	1.84	R								
23'	R	1.83	R								
24'	R	1.82	R								
25'	R	1.82	R								
26'	R	1.80	R								
27'	R	1.79	R								
28'	R	1.78	R								
29'	R	1.76	R								
30'	R	1.74	R								
31'	R	1.71	R								
32'	R	1.67	R								
33'	R	1.58	R								
34'	R	1.32	R								

Discharge Voltages for New Batteries/ Cycle #2

(Cont'd)

Battery No.	24			25				26		
4/16/52				Discharge at 300 Amperes						
	1	2	3		1	2	3		1	2	3
Time	U	T	U	Time	T	U	T	Time	U	T	U
OCV	2.12	2.11	2.11	OCV	2.12	2.12	2.12	OCV	2.11	2.11	2.11
5"	1.68	1.66	1.67	5"	1.67	1.68	1.66	5"	1.69	1.68	1.66
30"	1.70	1.67	1.68	30"	1.69	1.68	1.66	30"	1.69	1.68	1.66
1'	1.69	1.66	1.67	1'	1.68	1.67	1.65	1'	1.68	1.67	1.65
2'	1.67	1.63	1.64	2'	1.65	1.64	1.62	2'	1.66	1.64	1.63
3'	1.64	1.60	1.61	3'	1.62	1.62	1.58	3'	1.64	1.62	1.60
4'	1.60	1.56	1.57	4'	1.58	1.58	1.54	4'	1.60	1.58	1.56
5'	1.57	1.50	1.52	5'	1.52	1.54	1.48	5'	1.56	1.52	1.51
6'	1.51	1.43	1.46	6'	1.33	1.50	1.28	6'	1.51	1.46	1.46
7'	1.41	1.12	1.21	6'30"	0.30	1.46	0.60	7'	1.42	1.22	1.32
7'30"	1.42	0.40	0.60					7'30"	1.40	0.06	1.24
				Discharge at 200 Amperes							
8'	1.52	0.12	0.22	7'	0.00	1.65	0.16	8'	1.49	R	1.42
								9'	1.24	R	0.92
				Discharge at 100 Amperes							
8'30"	1.70	0.90	1.17	7'30"	0.38	1.78	0.45	9'30"	1.59	0.08	1.56
9'	1.72	0.61	1.66	8'	0.38	1.78	0.46	10'	1.62	0.00	1.58
10'	1.71	0.31	1.66	9'	0.02	1.77	0.10	11'	1.62	R	1.58
11'	1.71	0.11	1.64	10'	R	1.76	R	12'	1.59	R	1.52
12'	1.68	R	1.60					13'	1.50	R	1.30
13'	1.66	R	1.45					13'30"	0.84	0.08	0.22
				Discharge at 50 Amperes							
14'30"	1.72	0.86	0.62	10'30"	0.75	1.80	0.75	14'	1.60	0.70	0.80
15'	1.75	0.99	0.64	11'	0.90	1.85	0.74	15'	1.71	0.90	0.68
16'	1.75	1.05	0.62	12'	0.94	1.86	0.63	16'	1.73	0.92	0.66
17'	1.74	1.10	0.62	13'	0.84	1.86	0.42	17'	1.74	0.94	0.62
18'	1.73	1.08	0.64	14'	0.50	1.86	0.10	18'	1.74	0.94	0.60
19'	1.70	1.04	0.60	15'	0.30	1.86	R	19'	1.74	0.92	0.58
20'	1.66	1.04	0.60	16'	0.10	1.86	R	20'	1.74	0.92	0.54
21'	1.52	0.96	0.58	17'	R	1.86	R	21'	1.73	0.92	0.52
22'	1.18	0.96	0.58	18'	R	1.86	R	22'	1.72	0.92	0.52
23'	0.75	0.90	0.54	19'	R	1.86	R	23'	1.72	0.88	0.52
24'	0.48	0.86	0.54	20'	R	1.86	R	24'	1.70	0.84	0.46
25'	0.32	0.78	0.46	22'	R	1.84	R	25'	1.66	0.72	0.36
26'	0.18	0.56	0.46	24'	R	1.84	R	26'	1.61	0.70	0.34
27'	0.02	0.50	0.42	26'	R	1.83	R	27'	1.36	0.70	0.34
				28'	R	1.82	R	28'	0.30	0.52	0.26
				30'	R	1.81	R				
				32'	R	1.80	R				
				34'	R	1.78	R				
				36'	R	1.77	R				
				38'	R	1.75	R				
				40'	R	1.72	R				
				42'	R	1.64	R				
				44'	R	1.10	R				

APPENDIX 4a (Sheet 11)

VOLTAGES ON CHARGE FOR NEW BATTERIES CYCLE 3

Battery		21			22			23		
Cell		1 T	2 U	3 T	1 U	2 T	3 U	1 T	2 U	3 T
Time	Rate									
4/16/52										
9:08 PM	0 OCV	2.01	2.00	2.01	2.02	2.02	2.02	2.02	2.02	2.02
9:10 PM	5	ON CHARGE - ALL CELLS								
9:15 PM	5	2.08	2.07	2.08	2.07	2.07	2.07	2.07	2.07	2.08
11:00 PM	5	2.10	2.10	2.10	2.11	2.10	2.10	2.10	2.10	2.10
4/17/52										
11:00 AM	5	2.55	2.61	2.54	2.61	2.61	2.57	2.60	2.55	2.57
2:00 PM	5	2.56	2.63	2.55	2.62	2.62	2.57	2.61	2.54	2.56
3:00 PM	5	2.56	2.63	2.54	2.62	2.61	2.56	2.60	2.54	2.56
3:55 PM	5	2.56	2.63	2.54	2.62	2.61	2.56	2.60	2.54	2.56
4:00 PM	0	OFF CHARGE								

Battery		24			25			26		
Cell		1 U	2 T	3 U	1 T	2 U	3 T	1 U	2 T	3 U
4/16/52										
9:08 PM	0 OCV	2.01	2.00	2.00.	1.58	1.99	1.55	2.00	2.00	2.00
9:10 PM	5	ON CHARGE - ALL CELLS								
9:15 PM	5	2.06	2.06	2.05	1.88	2.03	1.89	2.04	2.04	2.04
11:00 PM	5	2.08	2.08	2.08	2.07	2.07	2.08	2.07	2.08	2.08
4/17/52										
11:00 AM	5	2.61	2.57	2.59	2.41	2.42	2.42	2.59	2.54	2.58
2:00 PM	5	2.62	2.57	2.60	2.55	2.66	2.57	2.65	2.58	2.63
3:00 PM	5	2.63	2.57	2.61	2.55	2.66	2.57	2.65	2.58	2.64
3:55 PM	5	2.62	2.56	2.60	2.54	2.65	2.56	2.65	2.57	2.63
4:00 PM	0	OFF CHARGE								

APPENDIX 4a (Sheet 12)

SPECIFIC GRAVITIES FOR NEW BATTERIES DURING CHARGE CYCLE 3

Battery		21			22			23		
Cell		1 T	2 U	3 T	1 U	2 T	3 U	1 T	2 U	3 T
Time	Rate									
4/16/52										
11:00 PM	5	1.165	1.150	1.165	1.170	1.175	1.165	1.165	1.165	1.170
4/17/52										
11:00 AM	5	1.270	1.270	1.280	1.275	1.275	1.275	1.275	1.275	1.275
2:00 PM	5	1.280	1.270	1.280	1.275	1.280	1.275	1.280	1.280	1.280
3:00 PM	5	1.280	1.270	1.280	1.275	1.280	1.275	1.280	1.280	1.280
3:55 PM	5	1.275	1.275	1.280	1.275	1.275	1.275	1.275	1.280	1.275

Battery		24			25			26		
Cell		1 U	2 T	3 U	1 T	2 U	3 T	1 U	2 T	3 U
4/16/52										
11:00 PM	5	1.150	1.145	1.140	1.130	1.125	1.140	1.130	1.140	1.135
4/17/52										
11:00 AM	5	1.265	1.260	1.255	1.205	1.195	1.205	1.240	1.230	1.235
2:00 PM	5	1.265	1.265	1.255	1.265	1.265	1.275	1.265	1.265	1.260
3:00 PM	5	1.270	1.265	1.255	1.265	1.265	1.275	1.265	1.265	1.260
3:55 PM	5	1.270	1.265	1.260	1.265	1.265	1.270	1.260	1.265	1.260

APPENDIX 4a (Sheet 13)

DISCHARGE VOLTAGES FOR NEW BATTERIES CYCLE 3

attery	21			22			23		
ell	1 T	2 U	3 T	1 U	2 T	3 U	1 T	2 U	3 T
300 AMPERES									
ime				Time			Time		
CV	2.18	2.17	2.18		2.14	2.13	2.14	2.13	2.12	2.13
5"	1.71	1.71	1.68	5"	1.69	1.68	1.69	5" 1.70	1.69	1.70
30"	1.72	1.71	1.68	30"	1.71	1.68	1.69	30" 1.71	1.68	1.70
'	1.71	1.70	1.66	1'	1.70	1.67	1.67	1' 1.70	1.67	1.69
2'	1.68	1.68	1.64	2'	1.67	1.64	1.65	2' 1.67	1.64	1.66
3'	1.64	1.64	1.60	3'	1.64	1.61	1.62	3' 1.64	1.61	1.64
4'	1.61	1.61	1.54	4'	1.61	1.57	1.58	4' 1.60	1.55	1.58
5'	1.54	1.56	1.46	5'	1.57	1.52	1.53	5' 1.55	1.50	1.54
6'	1.40	1.52	0.40	6'	1.52	1.44	1.46	6' 1.47	1.20	1.46
				7'	1.40	1.20	0.80	6½' 1.45	R	1.44
200 AMPERES									
6½'	1.25	1.64	R	7½'	1.45	1.17	R	7' 1.54	R	1.54
7'	0.04	1.70	R	8'	1.32	0.82	R	8' 1.47	R	1.48
				8½'	1.18	0.57	R	8½' 1.00	R	1.34
100 AMPERES									
7½'	0.30	1.78	0.00	9'	1.63	1.07	0.12	9' 1.59	0.12	1.62
8'	0.20	1.78	R	10'	1.60	0.98	0.09	10' 1.56	R	1.65
9'	R	1.78	R	11'	0.75	0.52	0.05	11' 0.82	R	1.63
10'	R	1.78	R	11½'	0.35	0.45	0.05	12' 0.20	R	1.56
11'	R	1.77	R					13' R	R	1.40
12'	R	1.76	R							
13'	R	1.74	R							
14'	R	1.72	R							
15'	R	1.70	R							
16'	R	1.66	R							
17'	R	1.52	R							
18'	R	0.60	R							
19'	R	0.10	R							

APPENDIX 4a (Sheet 14)

DISCHARGE VOLTAGES FOR NEW BATTERIES CYCLE 3

Battery	21			22			23		
Cell	1 T	2 U	3 T	1 U	2 T	3 U	1 T	2 U	3 T
				50 AMPERES					
Time				Time			Time		
19½'	0.80	0.54	0.72	12'	1.00	1.15	1.05	13½'	0.50	0.62	1.65
20'	0.80	0.52	0.72	13'	1.20	1.75	1.40	14'	0.56	0.61	1.66
21'	0.78	0.52	0.68	14'	1.14	1.74	1.46	15'	0.60	0.56	1.66
22'	0.72	0.49	0.67	15'	0.80	1.65	0.60	16'	0.62	0.54	1.66
23'	0.66	0.45	0.61	16'	0.78	1.48	0.56	17'	0.65	0.52	1.60
24'	0.60	0.42	0.57	17'	0.76	1.14	0.40	18'	0.64	0.50	1.50
25'	0.55	0.40	0.52	18'	0.60	0.82	0.28	19'	0.58	0.46	1.20
26'	0.46	0.33	0.42	19'	0.50	0.72	0.26	20'	0.52	0.40	0.95
27'	0.36	0.24	0.34	20'	0.42	0.68	0.23	21'	0.50	0.39	0.76
28'	0.24	0.12	0.20	21'	0.04	0.55	0.15	22'	0.46	0.38	0.58
29'	0.20	0.10	0.16	22'	R	0.50	0.12	23'	0.32	0.27	0.38
								24'	0.20	0.24	0.24
								25'	0.20	0.22	0.18

APPENDIX 4a (Sheet 15)

DISCHARGE VOLTAGES FOR NEW BATTERIES CYCLE 3

Battery	24			25			26		
Cell	1 U	2 T	3 U	1 T	2 U	3 T	1 U	2 T	3 U
300 AMPERES									
Time				Time			Time		
OCV	2.12	2.10	2.10	OCV	2.11	2.11	2.12	OCV	2.10	2.10	2.10
5"	1.67	1.66	1.65	5"	1.65	1.66	1.64	5"	1.64	1.66	1.65
30"	1.69	1.66	1.65	30"	1.67	1.67	1.64	30"	1.65	1.66	1.65
1'	1.63	1.65	1.63	1'	1.66	1.66	1.63	1'	1.64	1.66	1.64
2'	1.65	1.62	1.61	2'	1.63	1.63	1.60	2'	1.61	1.63	1.61
3'	1.62	1.58	1.57	3'	1.59	1.60	1.56	3'	1.58	1.60	1.58
4'	1.59	1.54	1.53	4'	1.55	1.56	1.54	4'	1.55	1.56	1.54
5'	1.54	1.48	1.48	5'	1.45	1.52	1.41	5'	1.51	1.51	1.51
6'	1.49	1.41	1.41	5½'	1.25	1.50	1.18	6'	1.45	1.44	1.44
7'	1.38	0.92	0.94					7'	1.38	1.26	1.36
200 AMPERES									
7⅝'	1.48	0.54	0.60	6'	0.10	1.58	0.40	7½'	1.53	1.37	1.51
8'	1.48	0.04	0.20					8'	1.51	0.75	1.49
								8½'	1.47	R	1.44
100 AMPERES									
8½'	1.67	0.76	1.50	6½'	0.82	1.78	1.04	9'	1.68	0.24	1.67
9'	1.70	0.55	1.66	7'	0.70	1.78	0.65	10'	1.68	R	1.68
10'	1.70	0.28	1.64	8'	0.12	1.78	0.02	11'	1.68	R	1.66
11'	1.67	0.04	1.62	9'	R	1.79	R	12'	1.67	R	1.65
12'	1.62	R	1.56					13'	1.65	R	1.62
13'	1.35	R	0.46					14'	1.62	R	1.58
13½'	0.88	R	0.12					15'	1.55	R	1.43
								16'	1.40	R	0.40
								16½'	0.90	R	0.10

APPENDIX 4a (Sheet 16)

DISCHARGE VOLTAGES FOR NEW BATTERIES CYCLE 3

attery		24			25				26	
ell	1 U	2 T	3 U	1 T	2 U	3 T	1 U	2 T	3 U
				50 AMPERES					
Time				Time			Time		
14'	1.70	0.90	0.78	9½'	0.64	1.86	0.40	17'	1.26	0.60	0.45
15'	1.69	1.06	0.74	10'	0.50	1.87	0.12	18'	1.66	0.66	0.20
16'	1.66	1.12	0.72	11'	0.38	1.88	R	19'	1.66	0.68	0.12
17'	1.59	1.06	0.70	12'	R	1.88	R	20'	1.65	0.68	0.04
18'	1.30	1.03	0.64	13'	R	1.88	R	21'	1.64	0.60	0.02
19'	0.90	1.00	0.60	14'	R	1.88	R	22'	1.60	0.50	R
20'	0.60	0.94	0.58	15'	R	1.88	R	23'	1.40	0.45	R
21'	0.44	0.85	0.50	16'	R	1.88	R	24'	0.30	0.40	R
22'	0.35	0.80	0.48	17'	R	1.87	R				
23'	0.25	0.74	0.44	18'	R	1.87	R				
24'	0.14	0.68	0.38	19'	R	1.86	R				
				20'	R	1.86	R				
				21'	R	1.86	R				
				22'	R	1.86	R				
				23'	R	1.86	R				
				24'	R	1.85	R				
				25'	R	1.85	R				
				26'	R	1.84	R				
				27'	R	1.84	R				
				28'	R	1.82	R				
				29'	R	1.81	R				
				30'	R	1.81	R				
				31'	R	1.80	R				
				32'	R	1.78	R				
				33'	R	1.76	R				
				34'	R	1.76	R				
				35'	R	1.75	R				
				36'	R	1.72	R				
				37'	R	1.70	R				
				38'	R	1.65	R				
				39'	R	1.52	R				
				40'	R	1.22	R				
				41'	R	0.90	R				

APPENDIX 4a (Sheet 17)

STAND DISCHARGE FOR NEW BATTERIES

Battery	21			22			23		
Cell	1 T	2 U	3 T	1 U	2 T	3 U	1 T	2 U	3 T
300 AMPERES									
Time				Time			Time		
OCV	2.02	2.02	2.02		2.03	2.03	2.03		2.03	2.03	2.03
5"	1.44	1.46	1.30	5"	1.55	1.52	1.46	5"	1.54	1.48	1.44
				15"	1.51	1.47	1.43	15"	1.49	1.29	1.40
				30"	1.46	1.42	1.36				
				1'	1.24	1.40	R				
200 AMPERES									
	NO DISCHARGE POSSIBLE			NO DISCHARGE POSSIBLE			30"	1.59	R	1.52
							1'	1.52	R	1.44
							1½'	0.70	R	1.30
100 AMPERES									
	NO DISCHARGE POSSIBLE			1½'	R	1.60	R	2'	0.20	R	1.30
50 AMPERES									
30"	R	1.84	R	1'45"	R	1.70	R	2'15"	0.30	R	1.46
				2'	R	1.70	R	2½'	0.02	R	1.44
				2½'	R	1.68	R	2'45"	R	R	1.34
				3'	R	1.65	R				
				3½'	R	1.52	R				
				4'	R	1.30	R				

Battery	24			25			26		
Cell	1 U	2 T	3 U	1 T	2 U	3 T	1 U	2 T	3 U
300 AMPERES									
OCV	2.02	2.02	2.02	1.85	2.00	1.80		2.00	2.01	2.00
5"	1.55	1.50	1.50	NO DISCHARGE POSSIBLE			5"	1.50	1.48	1.43
15"	1.51	1.46	1.46				15"	1.44	1.42	1.38
30"	1.46	1.41	1.40				30"	1.40	1.35	1.32
1'	1.10	1.18	0.80				45"	1.32	1.20	1.20
							1'	1.20	0.20	1.10
200 AMPERES									
NO DISCHARGE POSSIBLE				NO DISCHARGE POSSIBLE			1'15"	1.30	R	1.81
100 AMPERES									
1½'	R	1.44	R	NO DISCHARGE POSSIBLE			1½'	1.48	R	1.42
							2'	1.30	R	1.10
							2'15"	0.80	R	0.55
50 AMPERES									
2'	R	1.60	R	5"	R	1.86	R	2½'	1.08	R	1.00
2½'	R	1.56	R	15"	R	1.84	R	3'	0.64	R	0.70
3'	R	1.36	R					3½'	0.16	R	0.40
3½'	R	1.20	R								
3'15"	R	0.80	R								

APPENDIX 4b

Ampere hours and watt hours obtained for new batteries for each cycle of successive discharges and after an overnight stand.

Battery #	21			22			23			24			25			26		
Cell #	1 T	2 U	3 T	1 U	2 T	3 U	1 T	2 U	3 T	1 U	2 T	3 U	1 T	2 U	3 T	1 U	2 T	3 U
AMPERE-HOURS																		
Cycle 1st	51.7	58.4	45.7	56.2	56.2	50.1	58.1	44.4	58.0	62.8	57.1	55.4	50.7	58.6	52.3	62.6	53.3	62.6
2nd	43.2	59.9	39.0	56.2	56.2	48.7	56.6	40.7	56.6	59.9	55.7	59.9	41.1	67.4	42.8	60.5	51.3	60.5
3rd	44.3	61.8	38.3	53.4	53.9	48.9	55.7	44.1	56.5	56.4	52.2	56.5	35.5	60.8	33.8	59.7	48.0	57.1
*No chg.	1.2	2.6	1.2	5.1	8.4	5.1	7.2	1.2	7.2	5.1	7.8	5.1	0.0	0.2	0.0	7.9	5.1	7.9
TOTAL AMPERE-HOURS	140.4	182.7	124.2	170.9	174.7	152.8	177.6	130.4	178.3	184.2	172.8	176.9	127.3	187.0	128.9	190.7	157.7	188.1
WATT-HOURS																		
Cycle 1st	56.9	91.6	50.1	82.4	75.0	61.3	80.1	53.5	84.3	93.4	66.8	69.2	56.6	96.7	56.8	97.2	64.2	90.4
2nd	58.3	100.3	46.6	83.5	76.6	59.3	80.0	51.3	87.6	91.4	65.0	76.9	51.2	113.1	49.9	94.0	63.5	76.1
3rd	55.4	87.9	46.0	75.2	71.3	57.5	70.7	49.9	83.4	82.3	62.0	68.7	44.9	101.9	43.8	90.5	60.8	79.2
*No chg.	0.9	4.4	0.8	7.3	12.6	5.4	7.7	1.7	10.1	7.2	10.8	6.6	0.0	0.4	0.0	9.9	5.8	9.3
TOTAL WATT-HOURS	171.5	284.2	143.5	248.4	235.5	183.5	238.5	156.4	265.4	274.3	204.6	221.4	152.7	312.1	150.5	291.6	194.3	255.0

*After overnight stand.

Ampere hours obtained for new batteries at each stage in 3 cycles of successive discharges at 300, 200, 100 and 50 amperes. Also, after an overnight stand.

Battery		21			22			23		
Cell		1 T	2 U	3 T	1 U	2 T	3 U	1 T	2 U	3 T
Ampere-Hours										
	300	35.1	35.1	32.4	37.5	37.5	36.3	35.1	32.4	35.1
1st	200	1.6	1.6	0.0	1.6	1.6	0.0	3.4	0.0	3.4
Cycle	100	7.5	14.2	5.8	7.5	7.5	5.0	8.3	0.8	8.3
	50	7.5	7.5	7.5	9.6	9.6	8.8	11.3	11.2	11.2
	300	32.4	32.4	32.4	37.5	37.5	37.5	32.4	32.4	32.4
2nd	200	1.6	1.6	0.0	1.6	1.6	0.0	5.0	0.0	5.0
Cycle	100	5.0	6.7	3.3	9.2	9.2	3.3	11.7	0.8	11.7
	50	4.2	19.2	3.3	7.9	7.9	7.9	7.5	7.5	7.5
	300	30.0	30.0	30.0	35.1	35.1	35.1	32.4	32.4	32.4
3rd	200	3.4	3.4	0.0	5.0	5.0	0.0	6.6	0.0	6.6
Cycle	100	2.5	20.0	0.0	5.0	5.0	5.0	6.7	1.7	7.5
	50	8.4	8.4	8.3	8.3	8.8	8.8	10.0	10.0	10.0
	300	1.2	2.4	1.2	5.1	5.1	5.1	1.2	1.2	1.2
Total No	200	0.0	0.0	0.0	0.0	0.0	0.0	5.0	0.0	5.0
Charge	100	0.0	0.0	0.0	0.0	0.4	0.0	0.4	0.0	0.4
	50	0.0	0.2	0.0	0.0	2.9	0.0	0.6	0.0	0.6

Battery		24			25			26				
Cell		1 U	2 T	3 U	1 T	2 U	3 T	1 U	2 T	3 U	Total T	U
Ampere-Hours												
	300	37.5	37.5	37.5	32.4	32.4	32.4	37.5	37.5	37.5	315.0	323.7
1st	200	1.6	0.0	0.0	0.0	1.6	1.6	3.4	1.6	3.4	13.2	13.2
Cycle	100	10.8	6.7	5.0	5.8	9.2	8.3	9.2	1.7	9.2	59.9	70.9
	50	12.9	12.9	12.9	12.5	15.4	10.0	12.5	12.5	12.5	95.0	103.3
	300	37.5	37.5	37.5	32.4	32.4	32.4	37.5	37.5	37.5	306.9	322.2
2nd	200	1.6	1.6	1.6	0.0	1.6	1.6	3.4	0.0	3.4	16.4	14.8
Cycle	100	10.0	5.8	10.0	3.3	5.0	5.0	7.5	1.7	7.5	56.7	60.0
	50	10.8	10.8	10.8	5.4	20.4	3.8	12.1	12.1	12.1	62.5	116.7
	300	35.1	35.1	35.1	27.6	27.6	27.6	35.1	35.1	35.1	285.3	300.6
3rd	200	3.4	3.4	3.4	1.6	1.6	1.6	5.0	5.0	5.0	33.2	26.8
Cycle	100	9.2	5.0	9.2	4.2	5.0	3.3	13.3	1.7	13.3	35.9	81.7
	50	8.7	8.7	8.8	2.1	26.6	1.3	6.3	6.2	3.7	63.8	89.6
	300	5.1	5.1	5.1	0.0	0.0	0.0	5.1	5.1	5.1	20.1	34.2
Total No	200	0.0	0.0	0.0	0.0	0.0	0.0	0.8	0.0	0.8	10.0	1.6
Charge	100	0.0	0.8	0.0	0.0	0.0	0.0	1.2	0.0	1.2	2.0	2.4
	50	0.0	1.9	0.0	0.0	0.2	0.0	0.8	0.0	0.8	6.0	2.0

Watt hours obtained for new batteries at each stage in 3 cycles of successive discharges at 300, 200, 100 and 50 amperes. Also, after an overnight stand.

Battery		21			22			23		
Cell		1 T	2 U	3 T	1 U	2 T	3 U	1 T	2 U	3 T
Watt-Hours										
	300	53.4	55.5	47.0	58.1	54.4	49.7	55.8	46.7	54.4
1st	200	0.0	2.5	0.0	2.2	0.7	0.0	4.7	0.0	4.1
Cycle	100	1.1	23.1	0.5	11.7	8.8	0.4	9.9	0.0	12.1
	50	2.4	10.5	2.6	10.4	11.1	11.2	9.7	6.8	13.7
	300	51.2	51.8	45.4	59.2	56.6	53.6	52.2	47.3	51.5
2nd	200	1.9	2.6	0.0	2.4	1.8	0.0	7.8	0.0	7.5
Cycle	100	3.0	11.8	0.5	14.6	10.9	0.3	15.6	0.0	19.0
	50	2.2	34.1	0.7	7.3	7.3	5.4	4.4	4.0	9.6
	300	48.0	48.6	41.7	55.8	53.7	51.9	51.2	45.4	51.2
3rd	200	2.2	5.7	0.0	6.7	4.2	0.0	8.8	0.0	9.6
Cycle	100	0.5	30.4	0.0	7.2	3.8	0.4	5.7	0.1	11.8
	50	4.7	3.2	4.3	5.5	9.6	5.2	5.0	4.4	10.8
	300	0.9	4.0	0.8	7.3	7.4	5.4	1.8	1.7	1.7
No	200	0.0	0.0	0.0	0.0	0.0	0.0	5.7	0.0	7.1
charge	100	0.0	0.0	0.0	0.0	0.6	0.0	0.1	0.0	0.5
	50	0.0	0.4	0.0	0.0	4.6	0.0	0.1	0.0	0.8

Battery		24			25			26				
Cell		1 U	2 T	3 U	1 T	2 U	3 T	1 U	2 T	3 U	TOTAL T	U
Watt-Hours												
	300	58.5	52.1	50.2	48.9	50.5	48.6	58.1	55.9	54.0	470.5	481.3
1st	200	2.3	0.0	0.0	0.0	2.6	0.6	4.8	0.2	4.4	10.3	18.8
Cycle	100	17.6	2.1	1.5	1.2	15.9	3.2	14.3	0.1	13.2	39.0	97.7
	50	15.0	12.6	17.5	6.5	27.7	4.4	20.0	8.0	18.8	71.0	137.9
	300	59.2	52.5	55.1	47.3	51.2	46.7	58.5	53.2	56.2	456.6	492.1
2nd	200	2.4	0.2	0.4	0.0	2.6	0.3	4.7	0.0	4.0	19.5	19.1
Cycle	100	17.0	2.3	15.3	0.9	8.8	1.3	11.4	0.1	9.6	53.6	88.8
	50	12.8	10.0	6.1	3.0	50.5	1.6	19.4	10.2	6.3	49.0	145.9
	300	54.8	51.2	50.9	42.0	43.6	41.1	53.7	53.4	53.7	433.5	458.4
3rd	200	5.0	0.9	1.4	0.2	2.5	0.6	7.5	3.6	7.4	30.1	36.2
Cycle	100	13.9	1.9	11.2	1.8	8.9	1.9	20.5	0.2	17.4	27.6	110.0
	50	8.6	8.0	5.2	0.9	46.9	0.2	8.8	3.6	0.7	47.1	88.5
	300	7.2	7.1	6.6	0.0	0.0	0.0	7.0	5.8	6.6	25.5	45.8
No	200	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.9	12.8	1.9
charge	100	0.0	1.2	0.0	0.0	0.0	0.0	1.4	0.0	1.2	2.4	2.6
	50	0.0	2.5	0.0	0.0	0.4	0.0	0.5	0.0	0.6	8.0	1.9

APPENDIX 5: The January 1953 Tests of Batteries Drained and Filled with 1.100 acid or with Distilled Water

1. Charge and discharge data (1.100 acid).
2. Charge and discharge data (distilled water).

APPENDIX 5

Table 1.1 Charge and Discharge Data (1.100 acid)

Battery Number 1

	Cell 1	Cell 2	Cell 3
OCV(m) *	1.20	0.58	0.84
Date 1/14/53	Dumped and drained of electrolyte		
Date 1/14/53	Filled with 1.100 acid (23°C)		
CC acid added	600	595	620
OCV(m)	1.47	0.65	1.63

PRE-TEST CHARGE

Date 1/15/53			
Cell temperature	29.0°C	28.8°C	28.8°C
Room temperature	29.0	29.0	29.0
OCV(m)	1.00	1.15	1.78
Specific gravity	1.062	1.050	doesn't float

Charged for 1 hour at 5 amp

hr.	min.	sec.	Voltage	Voltage	Voltage
0	0	2	4.4	35.0	3.9
Adjust recorder			Scale 5	Scale 50	Scale 10
0	1	0	2.35	2.50	2.10
0	10	0	2.24	2.22	2.05
0	18	0	2.225	2.20	2.05
0	25	0	2.22	2.18	2.045
0	45	0	2.22	2.17	2.045
0	58	0	2.22	2.17	2.045
1	0	0		Current cut	

Temperature during Pre-test charge

0	0	0	29.2	29.0	29.0
0	15	0	30.6	29.4	29.0
0	30	0	30.8	29.4	29.06
0	40	0	30.8	29.7	29.1
0	55	0	31.2	30.0	29.3
1	2	0	31.4	30.12	29.35
Room temperature			29.0	29.0	29.0

*See page 7.584a for 2-second 5-ampere charge voltages for batteries prior to draining of electrolyte.

Battery Number 1 (Cont'd)
1/15/53

PRE-TEST DISCHARGE

	Cell 1	Cell 2	Cell 3
Specific gravity	1.083	1.045	doesn't float
OCV(m)	1.97	1.90	1.86
Temperature of cell	31.45°C	30.5°C	29.9°C

Discharged at 5 amps to one volt

Cell 1		Cell 2		Cell 3	
Min.	Volts	Min.	Volts	Min.	Volts
OCV	1.97	OCV	1.90	OCV	1.86
5/60	1.83	5/60	1.80	5/60	1.78
1/2	1.81	1	1.79	1	1.76
1	1.81	5	1.775	3	1.74
2	1.805	7	1.77	6	1.72
3	1.795	8	1.765	8	1.705
4	1.79	10	1.76	10	1.69
5	1.785	12	1.75	12	1.675
6	1.78	15	1.73	15	1.64
7	1.77	17	1.71	17	1.58
8	1.765	20	1.67	18 1/2	1.51
9	1.75	21	1.65	19	1.465
10	1.745	22	1.61	19 1/2	1.42
11	1.74	23	1.545	20	1.36
12	1.725	24	1.345	20 1/2	1.305
15	1.69	24 45/60	1.00	21	1.25
16	1.67			22	1.16
17	1.655			23	1.075
18	1.635			23 1/2	1.035
19	1.605			24	1.000
20	1.58				
21	1.545				
22	1.502				
23	1.44				
24	1.365				
24 1/2	1.305				
25	1.235				
26	1.01				
26 4/60	1.00				
Temperature	31.55°C		30.8°C		30.3°C
Watt hours	3.59		3.52		3.16

Temperature during Pre-test discharge

Initial	31.45°C	30.5°C	29.9°C
Final	31.55	30.8	30.3
Room	29.0	29.0	29.0

Battery Number 1 (Cont'd)
1/15/53

TEST CHARGE

			Cell 1	Cell 2	Cell 3
Cell temperature			30.1°C	30.1°C	30.0°C
Room temperature			29.2	29.2	29.2
OCV(m)			1.92	1.86	1.82
Specific gravity			1.063	1.040 floating	not floating
		Charged at 5 amps for two hours			
hr.	min.	sec.	Voltage	Voltage	Voltage
0	0	2	2.10	2.15	1.95
0	4	0	2.12	2.15	2.06
0	5	0	$MgSO_4$-Na_2SO_4		
0	9	0	2.16	2.14	2.07
0	11	0			AD-X2
0	14	0	2.19	2.14	2.08
0	30	0	2.26	2.14	2.07
1	0	0	2.29	2.15	2.06
1	10	0	2.305	2.15	2.06
1	30	0	2.315	2.15	2.06
1	40	0	2.32	2.15	2.06
1	50	0	2.33	2.145	2.065
1	58	0	2.33	2.145	2.065
	Current cut				

Temperature during Test charge

0	0	0	30.1	30.1	30.0
			$MgSO_4$-Na_2SO_4		
0	4	0	30.1	30.1	30.0
0	9	0	29.4	30.1	30.0
0	10	0	29.4	30.1	30.0
0	11	0			AD-X2
0	13	0	29.5	30.2	29.9
0	17	0	29.8	30.2	30.2
0	22	0	30.15	30.25	30.28
0	30	0	30.5	30.4	30.3
0	45	0	30.9	30.5	30.2
1	0	0	31.2	30.6	30.2
1	30	0	31.7	30.85	30.3
1	45	0	31.9	30.9	30.32
2	0	0	32.0	30.92	30.3
2	5	0	32.0	30.95	30.3

APPENDIX 5
Table 1.1 (sheet 4)

Battery Number 1 (Cont'd)
1/15/53

TEST DISCHARGE

	Cell 1	Cell 2	Cell 3
OCV(m)	1.96	1.93	1.90
Specific gravity	1.105	1.050	1.040 floats
Temperature of cell	31.4 before 31.4 after	30.9 before 31.3 after	30.1 before 30.9 after

Discharged at 10 amps to one volt

Cell 1 Min.	Cell 1 Volts	Cell 2 Min.	Cell 2 Volts	Cell 3 Min.	Cell 3 Volts
Zero voltage in 2 seconds		10/60	1.86	10/60	1.80
		1	1.85	1	1.78
		1 1/2	1.805	3	1.765
*Discharged 1/16/53		2	1.805	5	1.75
5/60	1.79 (5 amps)	3	1.80	7	1.735
1	1.78 "	5	1.79	8	1.730
2	1.78 "	8	1.78	9	1.725
3	1.78 "	9	1.77	10	1.715
3	1.67 (10 amps)	10	1.77	11	1.71
4	1.775 (5 amps)	11	1.77	12	1.70
7	1.77 "	12	1.76	13	1.69
10	1.77 "	13	1.755	14	1.68
13	1.75 "	14	1.75	15	1.67
13 1/2	1.63 (10 amps)	15	1.75	16	1.66
14	1.61 "	17	1.735	17	1.65
18	1.53 "	18	1.73	18	1.63
19	1.50 "	19	1.71	19	1.61
20	1.45 "	23	1.685	20	1.59
21	1.39 "	24	1.67	21	1.56
22	1.31 "	26	1.65	22	1.51
23	1.21 "	28	1.60	23	1.45
24	1.03 "	29	1.55	24	1.38
24 12/60	1.00 "	30	1.465	25	1.29
		31	1.175	26	1.21
		31 25/60	1.000	27	1.12
				28	1.025
				28 20/60	1.000

*Sat overnight, no charge applied

Watt hours	4.86	8.94	7.56
Temp. at end of dis.	31.4°C	31.3°C	30.9°C
Room temp.	29.2	29.2	29.2

Temperature during test discharge

Initial	31.4°C	30.9°C	30.1°C
Final	31.4	31.3	30.9
Room	27.8	27.8	27.8

APPENDIX 5
Table 1.1 (sheet 5)

Battery Number 1 (Cont'd)

RECOVERY DISCHARGE

	Cell 1	Cell 2	Cell 3
Date 1/16/53			
OCV(m)	1.94	1.87	1.845
Specific gravity	1.105	1.045	1.040 floating
Temperature of cell	39.3	39.4	39.5

Discharged at 5 amps to one volt

Cell 1		Cell 2		Cell 3	
Min.	Volts.	Min.	Volts	Min.	Volts
zero voltage in 5 seconds.		2/60	1.73	2/60	1.79
		2	1.65	1	1.73
Date: 1/17/53		3	1.55	2	1.715
		4	1.21	3	1.70
		4 55/60	1.00	4	1.69
				5	1.67
				6	1.655
				7	1.64
				8	1.61
				9	1.595
				10	1.57
				11	1.53
				12	1.49
				13	1.43
				14	1.39
				15	1.34
				16	1.29
				17	1.24
				18	1.19
				19	1.15
				20	1.095
				21	1.05
				22	1.005
				22 21/60	1.00

APPENDIX 5
Table 1.2 Charge and Discharge Data (1.100 acid)

Battery Number 2

	Cell 1	Cell 2	Cell 3
OCV(m)	0.91	0.89	1.13
2-sec 5 amp-voltage	3.1	3.8	3.3
Date 1/15/53	Dumped and drained of electrolyte		
Date 1/15/53	Filled with 1.100 acid (27.6°C) Room temperature (29.0°C)		
CC acid added	538	537	543
OCV(meter)	0.66	1.14	1.25
Temperature	27.6°	27.7°	27.6°

PRE-TEST CHARGE

Date 1/16/53				
Cell temperature		28.5	28.8	28.8
Room temperature		27.2	27.2	27.2
OCV(m)		.49	.96	1.16
Specific gravity		1.040	1.040	1.040
Charged for 1 hour at 5 amp				
hr	min	sec	Voltage	Voltage	Voltage
0	0	0	1.22	1.26	1.32
0	1	0	1.86	1.92	1.93
	15		2.06	2.04	2.04
	30		2.09	2.06	2.05
	45		2.105	2.08	2.07
	58		2.14	2.095	2.085
1	0	0		current cut	
Temperature during pre-test charge					
0	0	0	28.2	28.8	28.7
0	10	0	28.5	28.8	28.7
0	20	0	28.5	28.85	28.8
0	30	0	28.5	28.8	28.65
0	40	0	28.7	28.9	28.7
0	50	0	28.8	29.0	28.7
1	2	0	28.85	30.0	28.7
off			28.85	30.5	28.7

Battery Number 2 (Cont'd)
1/16/53

Temperature during Pre-test discharge

	Cell 1	Cell 2	Cell 3
Initial temperature	27.4	27.8	27.4
Final temperature	27.5	27.8	27.2
Room temperature	25.0	25.0	25.0

PRE-TEST DISCHARGE

Specific gravity	1.045	Floating less than 1.040	1.057
OCV(m)	2.00	1.98	1.98
Temperature	28.8	30.0	28.6

Discharged at 5 amps to one volt

Cell 1		Cell 2		Cell 3	
Min.	Volts	Min.	Volts	Min.	Volts
OCV	1.96	OCV	1.94	OCV	1.94
2/60	1.91	2/60	1.90	2/60	1.90
1	1.88	1	1.87	1	1.88
3	1.86	2	1.86	5	1.86
5	1.85	3	1.85	7	1.85
7	1.845	6	1.84	10	1.845
10	1.835	11	1.83	12	1.84
13	1.82	15	1.82	15	1.83
15	1.81	20	1.80	20	1.81
21	1.79	23	1.78	23	1.80
24	1.74	25	1.75	25	1.785
26	1.22	27	1.62	27	1.76
27	1.06	27 15/60	1.34	29	1.35
27 18/60	1.00	27 1/2	1.29	30	1.24
		28	1.22	31	1.09
		28 1/2	1.15	31 26/60	1.00
		29	1.05		
		29 15/60	1.00		
Watt hours	4.41		4.31		4.63

Battery Number 2 (Cont'd)
1/16/53

TEST CHARGE

	Cell 1	Cell 2	Cell 3
Cell temperature	28.5	28.6	28.4
Room temperature	26.8	26.8	26.8
OCV(m)	1.88	1.52	1.50
Specific gravity	1.040	1.040	1.040 floating

Charged at 5 amps for two hours

hr	min	sec	temp.	Volts	temp.	Volts	temp.	Volts
0	0	0						
0	1	0		1.94		1.93		1.90
0	5	0	28.4	2.03	28.55	2.01	28.3	2.01
0	6 - 7½	0			AD-X2 added			
0	8	0	28.4		29.0		28.3	
0	8½	0		2.05		2.04		2.03
0	9	0	28.4		29.7		28.35	
0	12	0	28.4		30.5		27.4	$MgSO_4$-Na_2SO_4
0	13	0		2.06		2.04		2.04
0	16	0	28.4		30.2		27.5	
0	21	0	28.4	2.10	29.85	2.06	27.5	2.05
0	30	0	28.5	2.12	29.45	2.08	27.65	2.07
0	40	0	28.6	2.14	29.4	2.10	27.8	2.095
0	50	0	28.7	2.16	29.0	2.12	27.9	2.105
1	0	0	28.85	2.17	28.9	2.13	28.1	2.12
1	15	0	29.0	2.18	28.9	2.14	28.3	2.14
1	30	0	29.2	2.19	29.1	2.16	28.5	2.15
1	45	0	29.4	2.20	29.2	2.17	28.65	2.165
1	58	0	29.5	2.20	29.3	2.18	28.75	2.17
2	current cut							

Battery Number 2 (Cont'd)
1/16/53

TEST DISCHARGE

	Cell 1	Cell 2	Cell 3
OCV(m)	2.06	2.03	2.04
Specific gravity	1.070	1.070	1.077
Temperature	29.4	29.2	28.7

Discharged at 10 amps to one volt

Cell 1		Cell 2		Cell 3	
Min.	Volts	Min.	Volts	Min.	Volts
OCV	2.02	OCV	1.98	OCV	1.97
Temp.	28.1	Temp.	28.65	Temp.	28.3
5/60	1.96	5/60	1.92	5/60	1.92
1	1.89	20/60	1.90	15/60	1.91
3	1.86	1/2	1.89	1/2	1.895
5	1.85	1	1.87	1	1.88
9	1.83	2	1.86	2	1.865
13	1.82	3	1.85	3	1.86
15	1.81	5	1.84	6	1.845
18	1.80	8	1.83	10	1.835
20	1.798	10	1.825	15	1.82
24	1.79	15	1.805	20	1.805
28 1/2	1.78	20	1.788	25	1.795
30	1.775	25	1.775	30	1.78
31 1/2	1.77	30	1.755	35	1.745
33	1.76	33	1.74	37	1.70
34 1/2	1.75	35	1.725	38	1.65
35 1/2	1.74	36	1.71	38 1/2	1.58
36 15/60	1.73	37	1.69	38 50/60	1.40
37	1.72	38	1.65	39	1.34
37 15/60	1.71	38 1/2	1.60	39 15/60	1.30
37 35/60	1.70	38 45/60	1.54	39 1/2	1.26
38	1.67	39	1.34	39 45/60	1.22
38 1/2	1.60	39 15/60	1.26	40	1.18
38 45/60	1.31	39 1/2	1.21	40 15/60	1.11
39	1.23	39 45/60	1.14	40 1/2	1.04
39 15/60	1.15	40	1.07	40 37/60	1.00
39 1/2	1.07	40 13/60	1.00		
39 42/60	1.00				
Temperature	28.4°		28.9°		28.7°
Watt hours	11.80		11.84		12.02

APPENDIX 5
Table 1.2 (sheet 5)

Battery Number 2 (Cont'd)
1/17/53

RECOVERY DISCHARGE

	Cell 1	Cell 2	Cell 3
OCV(m)	1.88	1.88	1.88
Specific gravity	1.058	1.070	1.065
Cell temperature	27.3	27.6	27.4
Room temperature	27.5	27.5	27.5

Discharged at 5 amps to one volt

Cell 1		Cell 2		Cell 3	
Min.	Volts	Min.	Volts	Min.	Volts
5/60	1.81	5/60	1.82	5/60	1.81
15/60	1.80	15/60	1.81	15/60	1.775
1/2	1.78	1/2	1.79	1/2	1.725
45/60	1.75	45/60	1.77	45/60	1.67
1	1.73	1	1.755	1	1.61
1 15/60	1.68	1 15/60	1.74	1 15/60	1.45
1 1/2	1.45	1 1/2	1.73	1 1/2	1.37
1 45/60	1.31	1 45/60	1.71	1 45/60	1.34
2	1.27	2	1.68	2	1.31
2 15/60	1.24	2 15/60	1.62	2 15/60	1.285
2 1/2	1.21	2 1/2	1.41	2 1/2	1.26
2 45/60	1.17	2 45/60	1.33	2 45/60	1.23
3	1.14	3	1.29	3	1.20
3 15/60	1.10	3 15/60	1.26	3 15/60	1.17
3 1/2	1.05	3 1/2	1.23	3 1/2	1.135
3 44/60	1.00	3 45/60	1.20	3 45/60	1.10
4	0.92	4	1.17	4	1.05
		4 15/60	1.14	4 14/60	1.00
		4 1/2	1.09	4 1/2	0.93
		4 45/60	1.04		
		4 56/60	1.00		
		5	0.98		
		5 15/60	0.91		
		5 25/60	0.85		
Temperature	27.5°		28.0°		27.5°
	28.0° Amb.				

APPENDIX 5

Table 1.3 Charge and Discharge Data (1.100 acid)

Battery Number 3

	Cell 1	Cell 2	Cell 3
OCV(m)	0.96	0.90	1.20
2-sec 5 amp-voltage	3.6	3.9	3.7
	Dumped and drained of electrolyte		
Date 1/15/53	Filled with 1.104 acid (26.5°C) Room temperature 29.2°C		
Cc acid added	524	481	525
OCV(m)	0.42	1.29	1.31
	PRE-TEST CHARGE		
Date 1/16/53			
Cell temperature	27.3	27.8	27.8
Room temperature	27.9	27.9	27.9
OCV(m)	.2	1.30	1.20
Specific gravity	1.075	1.040 (floating)	1.050
	Charged for 1 hour at 5 amps		

hr.	min.	sec.	Voltage	Voltage	Voltage
0	0	2	2.6 falling start 5 amp charge	2.0	3.2 falling
0	0	30	2.28	2.04	2.08
0	5	0	2.1	2.07	2.08
0	10	0	2.085	2.06	2.065
0	15	0	2.08	2.05	2.06
0	20	0	2.08	2.05	2.06
0	25	0	2.08	2.05	2.06
0	30	0	2.08	2.05	2.06
0	35	0	2.08	2.05	2.06
0	40	0	2.08	2.05	2.06
0	45	0	2.08	2.05	2.06
0	50	0	2.08	2.05	2.06
0	55	0	2.08	2.05	2.06
0	58	0	2.08	2.05	2.06
			Temperature during pre-test charge		
0	0	0	27.1	27.6	27.5
0	10	0	27.2	27.7	27.5
0	20	0	27.6	27.7	27.5
0	30	0	27.8	27.75	27.5
0	40	0	28.0	27.75	27.6
0	50	0	28.1	27.8	27.6
0	59	0	28.2	27.9	27.7

Battery Number 3 (Cont'd)
1/16/53

PRE-TEST DISCHARGE

	Cell 1	Cell 2	Cell 3
Specific gravity	1.080	1.050	1.057
OCV(m)	1.95	1.93	1.94
Temperature	27.4	27.4	27.6

Discharged at 5 amps to one volt

Cell 1		Cell 2		Cell 3	
Min.	Volts	Min.	Volts	Min.	Volts
5/60	1.90	5/60	1.87	5/60	1.88
1	1.88	1	1.86	1	1.86
5	1.87	5	1.85	5	1.86
9	1.86	11	1.84	8	1.85
15	1.85	15	1.83	12	1.84
18	1.85	18	1.82	15	1.84
21	1.84	21	1.82	19	1.83
24	1.84	22	1.81	23	1.82
27	1.83	24	1.81	27	1.82
29	1.82	25 1/2	1.80	29	1.81
33	1.80	28	1.80	32	1.80
35	1.77	30	1.79	34	1.79+
36 45/60	1.68	32 1/2	1.78	36	1.78+
37	1.28	34 1/2	1.77	38 1/2	1.77
37 4/60	1.00	36	1.76	39	1.76
		36 1/2	1.75	40	1.75
		38 10/60	1.74	40 1/2	1.74
		39	1.73	41	1.73
		39 1/2	1.72	41 15/60	1.72
		40	1.71	41 1/2	1.71
		40 1/2	1.69	41 45/60	1.70
		40 45/60	1.66	42	1.66
		41	1.60	42 15/60	1.28
		41 10/60	1.28	42 22/60	1.00
		41 21/60	1.00		

Final temp.	27.5	27.8	27.2
Watt hours	5.67	6.22	6.41

Temperature during pre-test discharge

Initial	27.4	27.8	27.4
Final	27.5	27.8	27.2

Battery Number 3 (Cont'd)
Date: 1/16/53

TEST CHARGE

	Cell 1	Cell 2	Cell 3
Cell temperature	27.2	27.3	27.2
Room temperature	25.1	25.1	25.1
OCV(m)	1.90	1.87	1.875
Specific gravity	1.070	1.045	1.050

Charged at 5 amps for 2 hours

hr.	min.	sec.	Volts	temp	Volts	temp	Volts	temp
0	1	0	2.0	26.7	2.0	26.6	2.05	26.6
0	5	0	2.06	26.65	2.05	26.65	2.04	26.6
0	6 - 7½	0	AD-X2 added					
0	8	0	2.05		2.05		2.04	
0	9	0		26.3		26.8		26.6
0	10	0	2.05	26.4	2.045	26.8	2.04	26.6
							$MgSO_4$-Na_2SO_4	
0	12	0	2.05	26.5	2.05	25.9	2.04	26.7
0	15	0	2.06	26.6	2.05	26.6	2.04	26.7
0	30	0	2.07	26.7	2.06	26.6	2.05	26.7
0	45	0	2.095	26.75	2.07	26.75	2.07	26.7
1	00	0	2.10	26.8	2.065	26.8	2.075	26.8
1	15	0	2.10	26.9	2.07	27.0	2.08	26.8
1	30	0	2.10	26.9	2.07	27.1	2.08	26.9
1	45	0	2.10	27.0	2.075	27.3	2.09	27.0
1	58	0	2.103	27.1	2.08	27.3	2.095	27.1
2	3	0		27.1		27.35		27.1

Battery Number 3 (Cont'd)
Date: 1/16/53

TEST DISCHARGE

	Cell 1	Cell 2	Cell 3
OCV(m)	1.99	1.97	1.97
Specific gravity	1.090	1.073	1.065
Temperature of cell	27.3	27.6	27.2

Discharged at 10 amps to one volt

Cell 1		Cell 2		Cell 3	
Min.	Volts	Min.	Volts	Min.	Volts
OCV	1.99	OCV	1.955	OCV	1.95
2/60	1.84	2/60	1.88	2/60	1.90
1/2	1.815	5/60	1.865	5/60	1.89
1	1.81	15/60	1.85	15/60	1.86
3	1.80	1	1.845	1	1.855
5	1.79	3	1.84	3	1.85
10	1.765	5	1.835	5	1.845
14	1.71	10	1.82	10	1.835
15	1.52	15	1.81	15	1.825
16	1.50	20	1.795	20	1.81
17	1.55	25	1.78	25	1.795
18	1.55	30	1.755	30	1.78
19	1.54	32	1.74	35	1.75
20	1.54	35	1.71	38	1.72
21	1.53	36	1.70	39	1.70
25	1.51	38	1.665	40	1.665
30	1.505	39	1.625	40 45/60	1.56
31	1.50	39 1/2	1.57	41	1.30
32	1.49	40	1.49	41 7/60	1.00
34	1.48	40 15/60	1.21		
35	1.47	40 25/60	1.00		
36	1.46				
37	1.445				
38	1.43				
39	1.41				
39 1/2	1.38				
40	1.325				
40 16/60	1.26				
40 27/60	1.00				
Temperature	29.5°		28.8°		28.7°
	27.8° Amb.		28.0° Amb.		28.2° Amb.
Watt hours	10.74		11.95		12.30

Battery Number 3 (Cont'd)
Date: 1/17/53

RECOVERY DISCHARGE

	Cell 1	Cell 2	Cell 3
OCV(m)	1.91	1.88	1.89
Specific gravity	1.090	1.072	1.065
Temperature of cell	27.6	27.4	27.4
Room temperature	28.3	28.3	28.3

Discharged at 5 amps to one volt

Cell 1		Cell 2		Cell 3	
Min.	Volts	Min.	Volts	Min.	Volts
5/60	1.74	5/60	1.82	5/60	1.79
15/60	1.69	15/60	1.80	15/60	1.775
1/2	1.67	1/2	1.785	1/2	1.75
45/60	1.66	1	1.785	1	1.76
1	1.66	2	1.78	3	1.755
1 1/2	1.66	3	1.77	5	1.74
2	1.66	5	1.75	8 15/60	1.70
2 1/2	1.655	9	1.70	9	1.685
3	1.65	10	1.685	10	1.65
3 1/2	1.645	12	1.60	10 1/2	1.61
4	1.645	12 1/2	1.48	10 45/60	1.53
4 1/2	1.64	12 45/60	1.25	11	1.21
5	1.635	13	1.10	11 8/60	1.00
6	1.625	13 4/60	1.00	11 12/60	0.70
7	1.61	13 10/60	0.80		
8	1.60				
9	1.585				
9 1/2	1.56				
10	1.53				
10 45/60	1.50				
11	1.48				
11 15/60	1.455				
11 1/2	1.425				
11 45/60	1.25				
12	1.065				
12 5/60	1.00				
12 14/60	0.58				
Temperature	28.0°		28.3°		28.2°

APPENDIX 5

Table 1.4 Charge and Discharge Data (1.100 acid)

Battery Number 4

	Cell 1	Cell 2	Cell 3
OCV(m)	0.26	1.01falling	1.00
Date 1/21/53	Pumped and drained of electrolyte		
CC acid added	495	480	443
OCV(m)	0.26	0.62	1.65

PRE-TEST CHARGE

Date 1/21/53			
Cell temperature	26.7°C	26.6°	26.4°
Room temperature	26.6°	26.6°	26.6°
OCV(m)	0.175	0.210	1.780
Specific gravity	1.056	1.040	1.070

Charged for 1 hour at 5 amps

hr.	min.	sec.	Volts	Temp.	Volts	Temp.	Volts	Temp.
0	1	0	1.98	26.8*	1.995	26.7*	1.96	26.4*
0	10	0	2.04	26.8	2.10	26.7	2.06	26.4
0	20	0	2.11	27.0	2.115	26.8	2.07	26.6
0	30	0	2.14	27.2	2.105	26.8	2.07	26.7
0	40	0	2.14	27.5	2.10	27.0	2.08	27.0
							14 ml elec withdr	
0	50	0	2.14	27.5	2.095	27.0	2.08	27.2
0	58	0	2.13	27.7	2.09	27.2	2.08	27.3
1	0	0	-.-	27.7	-.-	27.2	-.-	27.3
			Current Cut					
1	7	0	1.97	27.7	1.96	27.3	1.94	27.3

* Room temperature = 27.2°

APPENDIX 5
Table 1.4 (sheet 2)

Battery Number 4 (Cont'd)
Date: 1/22/53

	Cell 1	Cell 2	Cell 3
PRE-TEST DISCHARGE			
Specific gravity	1.055	Barely floats	Won't float
OCV(m)	1.96	1.945	1.925
Temperature	27.5°C	27.4°	27.2°

Discharged at 5 amps to one volt

Cell 1		Cell 2		Cell 3	
Min.	Volts	Min.	Volts	Min.	Volts
Will not sustain 5 amps.		Will not sustain 5 amps.		2/60	1.84
				2	1.82
				3	1.81
2nd attempt .8 volt and discharging three volt meter.		2nd attempt OCV = 1.895 did not sustain.		6	1.80
				7	1.79
				8	1.785
				11	1.770
3rd attempt OCV 1.93 will not sustain 5 amp.		3rd attempt OCV = 1.92 will not sustain 5 amps.		13	1.770
				15	1.755
				16	1.75
				18	1.745
				19	1.74
				20	1.73
				22	1.725
				24	1.720
				28	1.69
				29	1.68
				30	1.67
				31	1.665
				33	1.65
				34	1.64
				35	1.63
				36	1.62
				37	1.605
				39	1.58
				40	1.57
				42	1.53
				43	1.505
				44	1.47
				45	1.425
				46	1.365
				47	1.295
				48	1.25
				49	1.20
				50	1.15
				51	1.02
				51 12/60	1.00
Watt hours	0.00		0.00		7.02

APPENDIX 5
Table 1.4 (sheet 3)

Battery Number 4 (Cont'd)
Date: 1/23/53

TEST CHARGE

	Cell 1	Cell 2	Cell 3
Cell temperature	27.2°	27.2°	27.5°
Room temperature	26.0°	26.0°	26.0°
OCV (m)	1.945	1.930	1.765
Specific gravity	1.075	1.045	just floats

Charged at 5 amps for two hours

hr.	min.	sec.	Volts	Temp.	Volts	Temp.	Volts	Temp.
0	1	0	2.13	27.2	2.08	27.2	1.96	27.1
0	5	0	2.13	27.0	2.09	27.0	2.04	26.8
0	6	0						
0	9	0	$MgSO_4$ + Na_2SO_4					
0	10	30	2.13	26.2	2.03	27.2	2.06	27.1
0	11	0					AD-X2	
0	12	0	2.12	26.5	2.08	27.2	2.08	27.2
0	15	0	2.12	26.5	2.08	27.1	2.08	27.9
0	20	0	2.12	26.5	2.08	27.1	2.10	28.0
0	30	0	2.12	26.7	2.09	27.2	2.10	27.8
0	40	0	2.12	26.8	2.09	27.3	2.10	27.6
0	50	0	2.12	27.0	2.09	27.4	2.10	27.5
0	60	0	2.12	27.2	2.09	27.4	2.10	27.6
1	10	0	2.12	27.2	2.095	27.5	2.10	27.7
1	20	0	2.12	27.2	2.095	27.6	2.10	27.8
1	30	0	2.12	27.5	2.095	27.8	2.10	27.7
1	40	0	2.12	27.6	2.095	27.9	2.10	27.9
1	50	0	2.12	27.6	2.095	27.9	2.10	28.0
1	58	0	2.12	27.8	2.10	28.0	2.10	28.0

Battery Number 4 (Cont'd)
Date: 1/23/53

TEST DISCHARGE

	Cell 1	Cell 2	Cell 3
OCV(m)	2.00	1.98	1.96
Specific gravity	1.090	1.050	1.055
Temperature of cell	27.8°	27.9°	28.0°

Discharged at 10 amps to one volt

Cell 1

Discharged through volt meter voltage 0.62

Min.	Volts
OCV	1.945
2/60	1.855
4	1.85
10	1.845
20	1.83
30	1.805
40	1.75
42	1.72
44	1.68
45	1.64
46	1.54
46 1/2	1.36
46 45/60	1.28
47	1.21
47 20/60	1.00

Temperature 27.5°C.

Watt hours 15.68

Cell 2

Discharged. Voltage dropped to 0 on closed circuit.

Min.	Volts
OCV	1.93
2/60	1.85
2	1.83
5	1.83
10	1.825
15	1.81
20	1.805
25	1.795
30	1.785
35	1.77
40	1.755
42	1.745
45	1.73
48	1.705
50	1.68
51	1.655
52	1.585
53	1.04
53 4/60	1.00

27.5°C.

14.12

Cell 3

Min.	Volts	Temp
OCV	1.94	28.0
5/60	1.85	
1	1.83	
2	1.82	
5	1.805	
8	1.785	
10	1.78	
12	1.775	
15	1.76	
18	1.743	
20	1.735	
25	1.703	
28	1.68	
30	1.66	
34	1.61	
36	1.58	
37	1.56	
38	1.52	
39	1.48	
40	1.44	
41	1.38	
42	1.30	
43	1.24	
44	1.16	
45	1.10	
46	1.03	
46 25/60	1.00	28.8°C.

12.72

APPENDIX 5
Table 1.4 (sheet 5)

Battery Number 4 (Cont'd)
Date: 1/24/53

RECOVERY DISCHARGE

	Cell 1	Cell 2	Cell 3
OCV(m)	1.92	1.90	1.825
Room temperature	27.4°	27.4°	27.4°
Cell temperature	28.2°	27.9°	26.8°

Discharged at 5 amps to one volt

Cell 1		Cell 2		Cell 3	
Min.	Volts	Min.	Volts	Min.	Volts
5/60	1.86	5/60	1.84	2/60	1.725
1	1.81	1	1.805	1	1.685
2	1.805	2	1.795	2	1.68
4	1.79	4	1.785	3	1.67
5	1.785	5	1.78	4	1.66
7	1.765	7	1.77	5	1.65
8	1.75	10	1.735	6	1.635
9	1.74	12	1.69	7	1.625
10	1.72	13	1.61	8	1.61
12	1.625	14	1.17	9	1.60
13	1.195	14 13/60	1.00	10	1.58
13 46/60	1.00			11	1.565
				12	1.545
				13	1.52
				14	1.495
				15	1.47
				16	1.43
				17	1.395
				18	1.355
				19	1.315
				20	1.28
				21	1.25
				22	1.22
				23	1.19
				24	1.15
				25	1.11
				26	1.075
				27	1.045
				28	1.010
				28 17/60	1.00
Temperature	28.0°C		28.0°C		27.0°C

APPENDIX 5

Table 1.5 Charge and Discharge Data (1.100 acid)

Battery Number 5

	Cell 1	Cell 2	Cell 3
OCV(m)	0.44	1.20	1.30
Date 1/21/53	Dumped and drained of electrolyte		
CC acid added	548	555	500
OCV(m)	0.45	1.30	1.25

PRE-TEST CHARGE

Date 1/22/53			
Cell temperature	26.3°C	26.7°C	26.5°C
Room temperature	27.5°	27.5°	27.5°
OCV(m)	0.440	1.28	1.22 falling
Specific gravity	1.065	1.048	1.075

Charged for 1 hour at 5 amps

hr.	min.	sec.	Volts	Temp.	Volts	Temp.	Volts	Temp.
0	3	0	2.10	26.5*	2.14	26.7*	2.16	26.7*
0	12	0	2.55	26.7	2.14	26.9	2.155	27.0
0	22	0	2.06	26.95	2.165	27.0	2.170	27.10
0	30	0	2.095	27.1	2.185	27.1	2.20	27.2
0	40	0	2.165	27.25	2.185	27.20	2.205	27.12
0	50	0	2.175	27.30	2.195	27.30	2.210	27.20
1	0	0		27.40		27.45		27.22
					Current cut			
1	8	0	1.97	27.38	1.955	27.50	1.960	27.18

* Room temperature = 26.8°C.

APPENDIX 5
Table 1.5 (sheet 2)

Battery Number 5 (Cont'd)

PRE-TEST DISCHARGE

	Cell 1	Cell 2	Cell 3
Specific gravity	1.075	1.054	1.068
OCV(m)	1.965	1.945	1.955
Temperature of cell	27.25°C	27.38°C	27.05°C

Discharged at 5 amps to one volt

Cell 1			Cell 2			Cell 3		
Min.	Volts	Temp.	Min.	Volts	Temp.	Min.	Volts	Tem
0	1.91	27.25°C	0	1.940	27.38°C	0	1.940	26.
1	1.895	27.28	1 45/60	1.870		5/60	1.875	
2	1.890		4	1.865		2	1.860	
3	1.890		7	1.860		8	1.855	
4	1.885		11	1.855		10	1.850	
5	1.880	27.30	14	1.845		13	1.840	
6	1.880		19	1.840		17	1.840	
7	1.880		23	1.830		21	1.835	
8	1.875	27.30	25	1.820		25	1.825	
9	1.870		27	1.815		27	1.815	
10	1.870		28 1/2	1.805		29	1.805	
11			30	1.795		30	1.800	
12			32	1.780		31	1.800	
13			33	1.765		32	1.795	
14			33 1/2	1.755		33	1.790	
15	1.860	27.30	34	1.740		34	1.780	
16			34 1/2	1.720		35	1.770	
17			34 45/60	1.705		35 1/2	1.760	
18			35	1.680		36	1.750	
19			35 15/60	1.640		36 1/2	1.735	
20	1.850	27.30	35 1/2	1.320		37	1.715	
24	1.840	27.30	35 40/60	1.000	27.18°	37 15/60	1.695	
25	1.830	27.30				37 40/60	1.600	
25 1/2	1.820					37 45/60	1.300	
26 1/2	1.805					37 53/60	1.000	27.0(
27	1.790							
27 15/60	1.780							
27 1/2	1.760							
27 45/60	1.720							
28	1.600							
28 5/60	1.300							
28 15/60	1.000	27.30						

Watt hours 4.36 5.43 5.75

APPENDIX 5
Table 1.5 (sheet 3)

Battery Number 5 (Cont'd)

1/22/53 TEST CHARGE

	Cell 1	Cell 2	Cell 3
Cell temperature	26.6°C	26.95°C	26.80°C
Room temperature	26.2	26.2	26.2
OCV(m)	1.920	1.900	1.900
Specific gravity	1.070	1.050	1.058

Charged at 5 amps for two hours

hr.	min.	sec	Volts	Temp.	Volts	Temp.	Volts	Temp.
0	3	0	2.035	26.3°C	2.020	26.75°C	2.030	26.70°C
0	5	0	2.035	26.35	2.025	*26.70	2.030	26.80
0	6	0		26.30		26.45		26.80
0	8	0		26.35		26.70		26.90**
0	9	0		26.35		26.80		26.10
0	10	0	2.040	26.35	2.035	26.85	2.040	26.40
0	17	0	2.050		2.040		2.040	
0	22	0	2.060	26.45	2.040	27.00	2.045	26.80
0	26	0	2.145		2.055		2.055	
				gassing		gassing		gassing
0	35	0	2.200	27.2	2.185	26.95	2.175	27.05
0	43	0	2.205		2.215		2.240	
0	60	0	2.220		2.220		2.245	
1	10	0	2.220	27.15	2.220	27.25	2.250	27.10
1	32	0	2.225	27.45	2.225	27.50	2.255	27.40
1	52	0	2.230		2.225		2.260	
2	00	0	2.230	27.80	2.225	27.85	2.260	27.80

*AD-X2 ** $MgSO_4+Na_2SO_4$ added

Battery Number 5 (Cont'd)

TEST DISCHARGE

	Cell 1	Cell 2	Cell 3
OCV(m)	1.980	1.96	1.97
Specific gravity	1.090	1.100	1.105
Temperature of cell	27.60°C	27.60°C	27.30°C
Room temperature	26.80	26.80	26.80

Discharged at 10 amps to one volt

	Cell 1		Cell 2		Cell 3	
Temp.	27.60°C		27.70°C		27.15°C	
	Min.	Volts	Min.	Volts	Min.	Volts
	0	1.965	0	1.955	0	1.950
	10/60	1.815	5/60	1.890	5/60	1.680
	45/60	1.805	1	1.855	1/2	1.520
	2 1/2	1.800	5	1.850	45/60	1.520
	5	1.800	8	1.840	1	1.480
	7	1.795	12	1.835	1 15/60	1.475
	9	1.785	15	1.825	1 1/2	1.490
	11	1.780	17	1.820	1 45/60	1.495
	15	1.775			2	1.500
	19	1.755	19	1.810	2 1/2	1.515
	20	1.745	21	1.805	3	1.540
	25	1.705	25	1.785	4	1.530
	25 1/2	1.690	28	1.765	4 15/60	1.520
	26	1.680	30	1.740	5	1.535
	26 15/60	1.670	31	1.700	6	1.535
	26 1/2	1.640	32	1.665	7	1.640
	26 45/60	1.620	32 15/60	1.645	7 15/60	1.640
	26 55/60	1.580	32 1/2	1.620	8	1.840
	27	1.540	32 45/60	1.575	9	1.840
	27 5/60		33	1.400	10	1.840
	27 20/60	1.200	33 10/60	1.280	15	1.835
	27 33/60	1.000	33 15/60	1.14	20	1.820
			33 21/60	1.000	23	1.800
					25	1.785
					26	1.770
					27	1.755
					28	1.725
					29	1.640
					29 15/60	1.580
					29 1/2	1.260
					29 37/60	1.000
Temperature	27.90°C		27.80°C		28.20°C	
Watt hours	8.06		10.00		8.56	

APPENDIX 5
Table 1.5 (Sheet 5)

Battery Number 5 (Cont'd)

1/23/53

RECOVERY DISCHARGE

	Cell 1	Cell 2	Cell 3
Specific gravity	1.085	1.085	1.090
OCV(m)	1.925	1.915	1.920
Temperature of cell	26.20°C	26.50°C	26.25°C

Discharged at 5 amps to one volt

Cell 1		Cell 2		Cell 3	
Min.	Volts	Min.	Volts	Min.	Volts
8/60	1.88	1/2	1.820	5/60	1.87
1/2	1.850	1	1.820	1/2	1.84
1	1.837	2	1.820	1	1.835
2	1.830	4	1.805	2	1.830
3	1.820	5	1.795	3	1.820
4	1.800	6	1.790	4	1.805
6	1.715	7	1.780	5	1.795
6 15/60	1.50	8	1.765	6	1.770
6 25/60	1.30	9	1.755	7	1.745
6 1/2	1.24	10	1.735	7 1/2	1.720
6 37/60	1.00	11	1.690	8	1.675
		11 1/2	1.630	8 15/60	1.620
		11 45/60	1.530	8 25/60	1.42
		11 55/60	1.31	8 1/2	1.32
		12	1.27	8 40/60	1.12
		12 8.5/60	1.00	8 42.5/60	1.00
Temperature	26.40°C		26.48°C		26.20°C

APPENDIX 5

Table 1.6 Charge and Discharge Data (1.100 acid)

Battery Number 6

	Cell 1	Cell 2	Cell 3
OCV(m)	0.22	0.28	1.08

Dumped and drained of electrolyte

Date 1/21/53			
CC acid added	567	581	600
OCV(m)	0.210	0.15	1.28

PRE-TEST CHARGE

Date 1/22/53			
Cell temperature	26.4°C	26.6°C	26.6°C
Room temperature	27.5°	27.5°	27.5°
OCV(m)	0.18	0.16	1.20
Specific gravity	1.065	1.070	1.045

Charged for 1 hour at 5 amps

hr.	min.	sec.	Volts	Temp.	Volts	Temp.	Volts	Temp.
0	0	0	0.16	26.4	0.06	26.5	0.74	26.6
0	1	0	2.12	26.4	2.03	26.6	2.12	26.6
0	10	0	2.19	26.6	2.10	26.8	2.14	26.8
0	20	0	2.20	26.8	2.11	27.0	2.15	26.8
0	30	0	2.22	27.0	2.13	27.2	2.16	27.0
0	40	0	2.24	27.2	2.14	27.3	2.18	27.1
0	50	0	2.25	27.3	2.16	27.4	2.19	27.3
0	58	0	2.26	27.4	2.17	27.5	2.195	27.3
1	0	0		27.4		27.5		27.35

Current off

Battery Number 6 (Cont'd)

1/22/53 PRE-TEST DISCHARGE

	Cell 1	Cell 2	Cell 3
Specific gravity	1.080	1.072	1.045
OCV(m)	2.0	2.0	1.98
Temperature of cell	27.25°C	27.25°C	27.3°C

Discharged at 5 amps to one volt

Cell 1			Cell 2			Cell 3		
Min.	Volts	Temp.	Min.	Volts	Temp.	Min.	Volts	Temp.
0	2.0	27.25°	0	2.0	27.4°	0	1.96	27.15°
5/60	1.91	27.25	5/60	1.92	"	5/60	1.92	27.15
1	1.88	27.35	1	1.90	"	1	1.90	"
2	1.865	"	5	1.87	"	5	1.87	"
3	1.86	27.25	9	1.86	27.3	9	1.86	"
4	1.857	"	12	1.85	"	12	1.85	"
5	1.857	"	15	1.84	"	15	1.845	"
6	1.85	"	18	1.83	"	18	1.84	"
8	1.843	"	21	1.82	"	21	1.83	"
12	1.825	"	24	1.78	"	24	1.82	"
15	1.817	27.25	26 1/2	1.30	"	28	1.80	"
17	1.80	"	26 51/60	1.00	27.3	30	1.78	"
20	1.785	"				32	1.75	"
25	1.75	27.25				35	1.68	"
30	1.68	"				36	1.60	"
32	1.62	"				36 1/2	1.50	"
33	1.52	"				37	1.28	"
33 1/2	1.10	"				37 18/60	1.00	27.15
33 52/60	1.00	27.20						
Watt hours	5.00			4.05			5.62	

APPENDIX 5
Table 1.6 (sheet 3)

Battery Number 6 (Cont'd)

1/22/53 TEST CHARGE

	Cell 1	Cell 2	Cell 3
Cell temperature	28.2°	27.2°	27.2°
Room temperature	26.8	26.8	26.8
OCV(m)	1.94	1.94	1.89
Specific gravity	1.070	1.078	1.050

Charged at 5 amps for two hours

hr.	min.	sec.	Volts	Temp.	Volts	Temp.	Volts	Temp
0	0	15	1.99	26.8	1.98	27.2	1.95	27.2
0	5	0	2.09	26.9	2.06	27.2	2.03	27.2
0	7	0	AD-X2	26.6		27.3		27.2
0	8	15	2.10	26.6	2.08	27.3	2.05	27.2
0	9	30			$MgSO_4+Na_2SO_4$			
0	11	0	2.12	27.0	2.085	26.75	2.06	27.15
0	14	0	2.12	27.0	2.09	26.70	2.06	27.10
0	19	0	2.137	27.0	2.10	26.70	2.06	27.10
0	30	0	2.20	27.0	2.17	26.8	2.12	27.2
0	46	0	2.28	27.1	2.20	27.2	2.19	27.4
1	0	0	2.285	27.2	2.20	27.4	2.19	27.5
1	15	0	2.29	27.3	2.22	27.5	2.185	27.5
1	30	0	2.295	27.4	2.22	27.5	2.18	27.5
1	45	0	2.295	27.5	2.22	27.6	2.18	27.5
1	58	0	2.295	27.7	2.225	27.7	2.18	27.6
2	0	0		27.7		27.7		27.6

Battery Number 6 (Cont'd)

1/22/53 TEST DISCHARGE

	Cell 1	Cell 2	Cell 3
OCV(m)	2.02	2.02	2.00
Specific gravity	1.115	1.108	1.063
Temperature of cell	27.55°C	27.6°C	27.5°C

Discharged at 10 amps to one volt

Cell 1			Cell 2			Cell 3		
Min.	Volts	Temp.	Min.	Volts	Temp.	Min.	Volts	Temp.
0	2.0	27.4	0	2.00	27.8	OCV =	1.97	27.5
5/60	1.88		5/60	1.88		5/60	1.89	
1/2	1.70		1	1.86		2	1.87	
1	1.65		3	1.86		3	1.87	
2	1.60		5	1.85		5	1.865	
2 1/2	1.58		9	1.84		10	1.845	
3	1.68		12	1.83		15	1.82	
4	1.66		15	1.82		20	1.785	
6	1.605		18	1.79		25	1.73	
10	1.56		24	1.77		27	1.68	
15	1.51	28.1	26	1.75		28	1.65	
18	1.48	28.3	28	1.73		29	1.59	
19	1.46		30	1.68		30	1.47	
21	1.44	28.4	31	1.61		31	1.25	
23	1.40		32	1.23		31 39/60	1.00	
24	1.38	28.5	32 21/60	1.00				
25	1.34							
26	1.30							
27	1.12							
27 1/2	1.04							
Temperature		28.8			28.3			27.8
Room temp.		26.8			26.8			26.8
Watt hours	6.94			9.62			9.33	

APPENDIX 5
Table 1.6 (sheet 5)

Battery Number 6 (Cont'd)

1/22/53

RECOVERY DATA

	Cell 1	Cell 2	Cell 3
OCV(m)	1.93	1.925	1.905
Specific gravity	1.094	1.083	1.062
Room temperature	27.0°C	27.0°C	27.0°C
Cell temperature	26.9	27.2	27.3

Discharged at 5 amps to one volt

Min.	Volts	Temp.	Min.	Volts	Temp.	Min.	Volts	Tem
0	1.93	26.8	0	1.93	27.1	0	1.91	27.
5/60	1.86	26.8	5/60	1.86	"	5/60	1.85	"
1	1.80	"	1	1.76	"	1	1.82	"
3	1.75	"	2	1.65	"	3	1.80	"
4	1.72	"	2 15/60	1.35	"	6	1.78	"
6	1.63	"	2 1/2	1.28	"	8	1.76	"
7	1.45	"	2 45/60	1.23	"	11	1.71	"
7 15/60	1.33	"	3	1.10	"	12	1.67	"
7 1/2	1.27	"	3 2/60	1.00	27.1	13	1.55	"
7 45/60	1.20	"				13 15/60	1.40	"
8	1.10	"				13 1/2	1.30	"
8 4/60	1.00	26.8				14	1.12	"
						14 10/60	1.00	27.

Table 1.7 Charge and Discharge Data (1.100 acid)

Battery Number 7

	Cell 1	Cell 2	Cell 3
OCV(m)	0.34	1.295 falling	0.82
Date 1/22/53	Dumped and drained of electrolyte		
CC acid added	535	539	538*
OCV(m)	0.17	1.85	1.32

PRE-TEST CHARGE

Date 1/23/53			
Cell temperature	26.2°C	26.5°C	26.0°C
Room temperature	26.3	26.3	26.3
OCV(m)	0.16	1.85	1.34
Specific gravity	1.072	floating	floating

Charged for 1 hour at 5 amps

hrs.	min.	sec.	Volts	Temp.	Volts	Temp.	Volts	Temp.
0	0	0		26.2		26.5		26.0
0	1	0	2.00	26.2	2.02	26.5	2.05	26.0
0	10	0	2.04	26.5	2.10	26.5	2.10	26.1
0	20	0	2.05	27.0	2.11	26.5	2.14	26.1
0	30	0	2.06	27.3	2.11	26.8	2.165	26.3
0	40	0	2.09	27.5	2.10	26.8	2.18	26.5
0	50	0	2.13	27.7	2.10	27.0	2.175	26.7
			2.13	27.8	2.10	27.2		26.8

*+98 added because of spilling.

Battery Number 7 (Cont'd)

PRE-TEST DISCHARGE

	Cell 1	Cell 2	Cell 3
Specific gravity	1.072	floats	floats
OCV(m)	2.00	1.98	1.98
Temperature of cell	27.6°C	27.3°C	26.8°C

Discharged at 5 amps to 1 volt

Cell 1		Cell 2		Cell 3	
Min.	Volts	Min.	Volts	Min.	Volts
OCV	2.00	OCV	1.94	OCV	1.94
5/60	1.94	5/60	1.88	1/60	1.87
1/2	1.92	1/2	1.86	1	1.84
1	1.91	1	1.855	2	1.835
3	1.90	3	1.84	5	1.825
5	1.88	5	1.84	10	1.815
10	1.87	6	1.83	15	1.805
15	1.84	11	1.82	21	1.79
18	1.76	15	1.81	25	1.765
18 15/60	1.70	20	1.80	27	1.75
18 1/2	1.30	22	1.79	30	1.635
18 34/60	1.00	25	1.73	30 58/60	1.00
		27	1.77		
		30	1.75		
		32	1.735		
		34	1.71		
		35	1.705		
		36	1.685		
		37	1.67		
		38	1.64		
		39	1.605		
		39 1/2	1.58		
		40	1.545		
		41	1.43		
		42	1.305		
		43	1.245		
		44	1.185		
		45	1.05		
		45 14/60	1.00		
Temperature	27.7°C		27.7°C		27.6°
Room temp.	27.1		27.1		27.1
Watt hours	2.87		5.73		4.59

Battery Number 7 (Cont'd)

1/23/53 TEST CHARGE

	Cell 1	Cell 2	Cell 3
Cell temperature	28.0°C	27.8°C	27.6°C
Room temperature	27.1	27.1	27.1
OCV(m)	1.93	1.88	1.89
Specific gravity	1.067	floats	floats

Charged at 5 amps for two hours

hr.	min.	sec.	Volts	Temp.	Volts	Temp.	Volts	Temp.
0	0	30	1.98	28.0	1.94	27.8	1.94	27.6
0	3	0	$MgSO_4$-Na_2SO_4	28.0				
0	4	30	2.04	27.0	2.03	27.6	2.005	27.6
0	5	30		27.4				
0	6	30					AD-X2	
0	8	0	2.06		2.045	27.3	2.025	
0	9	0				27.6		
0	20	0	2.075		2.05		2.035	
0	26	0	2.16	27.8	2.10	28.0	2.10	27.8
0	35	0	2.17	27.8	2.10	28.0	2.165	27.8
0	40	0	2.17	27.9	2.10	28.0	2.165	27.6
0	50	0	2.175	28.0	2.09	28.0	2.15	28.0
0	60	0	2.175	28.2	2.09	28.2	2.15	27.9
1	10	0	2.16	28.3	2.08	28.2	2.14	28.2
1	20	0	2.17	28.4	2.08	28.4	2.14	28.2
1	30	0	2.16	28.5	2.08	28.4	2.14	28.3
1	40	0	2.16	28.6	2.08	28.5	2.14	28.3
1	50	0	2.16	28.7	2.08	28.7	2.13	28.5
1	58	0	2.16	28.8	2.08	28.7	2.13	28.5

Battery Number 7 (Cont'd)

1/23/53

TEST DISCHARGE

	Cell 1	Cell 2	Cell 3
OCV(m)	2.02	1.98	2.00
Specific gravity	1.110	floats	1.075
Temperature of cell	28.8°C	23.6°C	28.6°C

Discharged at 10 amps to one volt

Cell 1		Cell 2		Cell 3	
Temp.	28.8°C		29.0°C		28.7°C
Min.	Volts	Min.	Volts	Min.	Volts
OCV	2.02	OCV	1.95	OCV	1.95
5/60	1.88	10/60	1.83	10/60	1.835
1/2	1.87	3	1.81	1	1.81
1	1.86	4	1.805	6	1.80
3	1.85	10	1.785	10	1.735
5	1.84	15	1.765	15	1.77
9	1.83	17	1.75	18	1.755
12	1.82	20	1.73	20	1.75
13	1.815	23	1.695	22	1.73
14	1.81	24	1.68	24	1.715
15	1.805	25	1.66	26	1.69
16	1.80	26	1.635	27	1.67
17	1.80	27	1.59	28	1.64
18	1.79	28	1.49	29	1.575
18 1/2	1.78	29	1.265	30	1.21
20	1.77	30	1.13	30 12/60	1.00
21	1.76	30 21/60	1.00		
22	1.74				
23	1.72				
23 45/60	1.70				
24	1.68				
25	1.60				
25 1/2	1.31				
25 45/60	1.08				
25 46/60	1.00				
Temperature	29.0°C		29.2°C		28.9°C
Watt hours	7.69		8.65		8.78

Battery Number 7 (Cont'd)

1/24/53

RECOVERY DISCHARGE

	Cell 1	Cell 2	Cell 3
OCV(m)	1.94	1.89	1.91
Specific gravity	1.100	1.045	1.070
Temperature of cell	28.5°C	28.5°C	28.2°C
Room temperature	27.7	27.7	27.7

Discharged at 5 amps to one volt

	Cell 1		Cell 2		Cell 3	
Temp.	28.5		28.5		28.2	
	Min.	Volts	Min.	Volts	Min.	Volts
	OCV	1.935	OCV	1.885	OCV	1.90
	5/60	1.88	5/60	1.83	5/60	1.85
	2	1.83	1	1.785	1	1.825
	4	1.82	2	1.785	2	1.81
	5	1.80	3	1.78	3	1.81
	6	1.79	4	1.77	4	1.805
	7	1.775	5	1.765	5	1.802
	9	1.59	8	1.74	8	1.785
	9 40/60	1.00	10	1.715	10	1.77
	Temp.	28.7	12	1.685	12	1.75
			15	1.585	15	1.69
	2nd Recoup		16	1.505	16	1.605
	OCV	1.932	17	1.36	17	1.23
	Temp.	28.7	18	1.295	17 15/60	1.00
	10/60	1.85	19	1.245	Temp.	28.3
	1	1.775	20	1.165		
	2	1.735	20 53/60	1.00	2nd Recoup	
	3	1.53	Temp.	28.7	OCV	1.89
	3 26/60	1.00			Temp.	28.3
	Temp.	28.7	2nd Recoup		5/60	1.805
			OCV	1.87	1	1.75
			Temp.	28.7	2	1.725
			5/60	1.75	3	1.68
			1	1.69	4	1.28
			2	1.665	4 21/60	1.00
			3	1.625		
			4	1.45		
			5	1.385		
			6	1.285		
			7	1.21		
			8	1.025		
			8 6/60	1.00		
			Temp.	28.7		

APPENDIX 5

Table 1.8 Charge and Discharge Data (1.100 acid)

Battery Number 8

	Cell 1	Cell 2	Cell 3
OCV(m)	1.32 falling	1.29 falling	1.22 falling
Date 1/22/53	Dumped and drained of electrolyte		
CC acid added	750	744	700
OCV(m)	1.32	1.33	1.25

PRE-TEST CHARGE

Date 1/23/53			
Cell temperature	26.00°C	26.55°C	26.20°C
Room temperature			
OCV(m)	1.245 falling	1.175 falling	1.080 falling
Specific gravity	1.070	1.070	1.065

Charged for 1 hour at 5 amps

hr.	min.	sec.	Volts	Temp.	Volts	Temp.	Volts	Temp.
0	2	0	2.045	26.10	2.070	26.69	2.080	26.28
0	8	0	2.060		2.065		2.065	
0	21	0	2.065		2.070		2.073	
0	36	0	2.085	26.10	2.095	26.55	2.100	26.22
0	44	0	2.100		2.105		2.120	
0	59	0	2.100		2.105		2.140	
0	60	0	2.100		2.105		2.140	
Final temperature				26.05		26.55		26.15

APPENDIX 5
Table 1.8 (sheet 2)

Battery Number 8 (Cont'd)

1/23/53 PRE-TEST DISCHARGE

	Cell 1	Cell 2	Cell 3
Specific gravity	1.075	1.070	1.065
OCV(m)	1.985	1.985	1.980
Temperature of cell	26.05	26.50	26.05

Discharged at 5 amps to one volt

Min.	Volts	Min.	Volts	Min.	Volts
OCV	1.968	OCV	1.960	OCV	1.950
5/60	1.940	5/60	1.920	5/60	1.90
1 1/2	1.915	1/2	1.905	1/2	1.890
3	1.905	3	1.895	1	1.885
5	1.895	9	1.880	4	1.880
8	1.890	15	1.875	10	1.865
10	1.885	23	1.865	24	1.845
12	1.880	30	1.850	31	1.835
14	1.880	38	1.825	37	1.810
17	1.880	41	1.780	39	1.790
20	1.875	41 15/60	1.76	40	1.765
25	1.870	41 1/2	1.75	41	1.720
29	1.860	41 45/60	1.72	41 15/60	1.695
32	1.850	41 55/60	1.69	41 1/2	1.65
36	1.840	42	1.66	41 40/60	1.58
39	1.820	42 10/60	1.55	41 50/60	1.38
40 1/2	1.795	42 20/60	1.36	42	1.32
41 1/2	1.74	42 1/2	1.32	42 10/60	1.27
41 45/60	1.68	42 45/60	1.14	42 20/60	1.15
42	1.43	42 50.5/60	1.00	42 24.6/60	1.00
42 7/60	1.38				
42 15/60	1.32				
42 25/60	1.26				
42 37.5/60	1.00				
Temperature	26.05°C		26.5°C		26.20°C
Watt hours	6.60		6.60		6.48

APPENDIX 5
Table 1.8 (sheet 3)

Battery Number 8 (Cont'd)

1/23/53

TEST CHARGE

	Cell 1	Cell 2	Cell 3
Cell temperature	26.30°C	26.55°C	26.28°C
Room temperature	27.0	27.0	27.0
OCV(m)	1.920	1.925	1.900
Specific gravity	1.070	1.075	1.065

Charged at 5 amp for 2 hours

hr.	min.	sec.	Volts	Temp.	Volts	Temp.	Volts	Temp.
0	0	0	1.920		1.920		1.900	
0	3	0		26.32		26.58		26.23
0	3	30	2.040		2.040		2.040	
0	4	30			AD-X2 added			
0	6	0	2.040		2.042		2.040	
0	6	30				26.34	$MgSO_4+Na_2SO_4$ added	
0	7	0						
0	8	30	2.040		2.042		2.040	
0	9	0		26.28		26.54		25.91
0	20	0		26.32		26.51		25.98
0	20	30	2.040		2.050		2.042	
0	34	0	2.060		2.065		2.060	
0	34	30		26.45		26.40		26.00
0	50	0	2.100	26.51	2.110	26.49	2.140	26.13
1	5	0	2.090	26.58	2.100	26.59	2.148	26.30
1	24	0	2.080	26.80	2.090	26.65	2.150	26.48
1	36	0	2.080	26.80	2.085	26.70	2.155	26.53
1	56	0	2.085	27.00	2.085	26.78	2.155	26.60
2	00	0		27.00		26.79		26.62

APPENDIX 5
Table 1.8 (sheet 4)

Battery Number 8 (Cont'd)

1/23/53 TEST DISCHARGE

	Cell 1	Cell 2	Cell 3
OCV(m)	1.985	1.985	1.982
Specific gravity	1.075	1.095	1.090
Temperature of cell	27.00°C	26.79°C	26.62°C

Discharged at 10 amps to one volt

Cell 1		Cell 2		Cell 3	
Temp. 27.10		27.02		26.92	
Min.	Volts	Min.	Volts	Min.	Volts
0	1.978	0	1.975	0	1.960
5/60	1.905	5/60	1.90	5/60	1.885
2	1.880	45/60	1.880	1/2	1.875
4	1.875	1 1/2	1.878	3	1.870
6	1.870	2	1.878	7	1.860
9	1.865	6	1.865	12	1.850
11	1.860	10	1.860	16	1.840
13	1.860*	14	1.855	20	1.835
16	1.855	16	1.845	24	1.825
20	1.845	20	1.840	26	1.815
26	1.835	28	1.820	29	1.805
31	1.810	31	1.805	31	1.795
33	1.795	33	1.790	33	1.775
34	1.785	34	1.785	34	1.755
35	1.770	35	1.770	35	1.720
36	1.740	37	1.750	35 1/2	1.685
36 1/2	1.725	37 1/2	1.740	36	1.620
37	1.680	38	1.720	36 1/2	1.36
37 1/2	1.400	38 1/2	1.680	36 45/60	1.29
37 45/60	1.290	39	1.560	37	1.20
38	1.140	39 15/60	1.33	37 13/60	1.00
38 7/60	1.00	39 1/2	1.26		
		39 45/60	1.11		
		39 50.8/60	1.00		
Temperature	27.30°C		27.30°C		27.15°C

*Temperature rose to 27.15°C.

Watt hours 11.61 12.07 11.19

APPENDIX 5
Table 1.8 (sheet 5)

Battery Number 8 (Cont'd)

RECOVERY DISCHARGE

1/24/53

	Cell 1	Cell 2	Cell 3
OCV(m)	1.920	1.922	1.905
Specific gravity	1.075	1.090	1.085
Temperature of cell	27.29°C	27.43°C	27.20°C

Discharged at 5 amps to one volt

Cell 1			Cell 2			Cell 3		
Min.	Volts	Temp.	Min.	Volts	Temp.	Min.	Volts	Tem
0	1.92		0	1.92	27.4	0	1.91	26.
15/60	1.87	27.28	5/60	1.86	"	5/60	1.87	"
2	1.84	"	2	1.82	"	4	1.80	"
6	1.80	"	5	1.79	"	6 1/2	1.72	"
10	1.36	"	7	1.75	"	8	1.27	"
10 35/60	1.20	"	8 1/2	1.60	"	8 23/60	1.00	26.
10 50/60	1.00	27.22	8 45/60	1.35	"			
			9 1/2	1.20				
			9 46/60	1.00	27.30			
Room temperature		27.6			27.5			27.

Table 1.9 Charge and Discharge Data (1.100 acid)

Battery Number 9

	Cell 1	Cell 2	Cell 3
OCV(m)	1.14 falling	1.18 falling	1.14 falling
Date 1/22/53	Dumped and drained of electrolyte		
CC of acid added	444	402	412
OCV(m)	1.22 falling	1.19 falling	1.15 falling

PRE-TEST CHARGE

Date 1/23/53			
Cell temperature	26.2°C	26.4°C	26.4°C
Room temperature	26.0	26.0	26.0
OCV(m)	1.22	1.22	1.18
Specific gravity	floats	1.045	1.065

Charged for 1 hour at 5 amp

hr.	min.	sec.	Volt	Temp.	Volt	Temp.	Volt	Temp.
0	0	0	.70	26.3	.80	26.6	.86	26.5
0	0	30	2.16	"	2.10	"	2.10	"
0	3	0	2.09	"	2.10	"	2.105	"
0	5	0	2.11	"	2.12	"	2.135	"
0	12	0	2.14	"	2.16	"	2.17	"
0	17	0	2.14	26.42	2.165	26.8	2.18	26.6
0	30	0	2.14	26.7	2.18	"	2.18	26.65
0	40	0	2.155	"	2.18	"	2.18	"
0	54	0	2.16	26.7	2.18	26.8	2.17	26.7
0	58	0	2.16	"	2.18	"	2.17	"
1	current	off		26.7		26.8		26.7

APPENDIX 5
Table 1.9 (sheet 2)

Battery Number 9 (Cont'd)

1/23/53 PRE-TEST DISCHARGE

	Cell 1	Cell 2	Cell 3
Specific gravity	floats	1.045	floats
OCV(m)	1.96	1.965	1.96
Temperature of cell	26.7°C	26.8°C	26.7°C

Discharged at 5 amps to one volt

Cell 1			Cell 2			Cell 3		
Min.	Volts	Temp.	Min.	Volts	Temp.	Min.	Volts	Temp.
0	1.96	26.5	0	1.955	26.5	0	1.94	26.8
1/2	1.88	"	5/60	1.90	"	1/2	1.86	"
4	1.84	"	1/2	1.88	"	5	1.82	26.7
12	1.82	26.6	10	1.84	26.7	12	1.80	26.8
15	1.81	"	15	1.82	"	15	1.78	"
21	1.785	"	21	1.80	"	18	1.76	"
27	1.75	"	27	1.76	"	20	1.75	26.85
30	1.72	"	33	1.67	26.8	22	1.735	"
37	1.43	"	35	1.60	"	25	1.71	"
37 15/60	1.30	"	36 15/60	1.50	"	27	1.685	"
37 1/2	1.20	"	36 35/60	1.40	"	30	1.63	"
37 38/60	1.00	26.6	36 45/60	1.30	"	31	1.59	"
			37	1.20	"	32	1.53	"
			37 6/60	1.00	26.9	33	1.445	"
						34	1.21	"
						34 20/60	1.00	27.0
Watt hours	5.50			5.50			4.96	

APPENDIX 5
Table 1.9 (sheet 3)

Battery Number 9 (Cont'd)

TEST CHARGE

1/23/53	Cell 1	Cell 2	Cell 3
Cell temperature	26.4°C	26.9°C	27.0°C
Room temperature	27.3	27.3	27.3
OCV(m)	1.89	1.90	1.87
Specific gravity	1.054	floating	floating

Charged at 5 amps for two hours

hr.	min.	sec.	Volts	Temp.	Volts	Temp.	Volts	Temp.
0	1	0	1.97	26.7	1.98	27.0	1.98	27.0
0	4	0	2.02	26.7	2.04	27.0	2.02	27.0
0	5	30	AD-X2 added			27.0		27.1
0	6	0	2.04	26.8	2.04	"	2.04	"
0	8	0	2.04	27.2	2.05	27.0	2.04	27.1
0	10	0			$MgSO_4$+Na_2SO_4 added			
0	12	0	2.04	27.6	2.06	26.4	2.05	27.2
0	17	0		27.8		26.6		27.2
0	22	0	2.065	27.7	2.08	26.6	2.09	27.2
0	30	0	2.10	27.6	2.125	26.7	2.14	27.3
0	45	0	2.16	27.4	2.18	26.9	2.16	27.4
1	0	0	2.18	27.3	2.185	27.0	2.16	27.6
1	15	0	2.18	27.3	2.18	27.3	2.15	27.7
1	30	0	2.18	27.5	2.18	27.6	2.15	27.9
1	45	0	2.18	27.7	2.18	27.8	2.15	28.0
1	58	0	2.185	27.8	2.18	27.9	2.145	28.1
2	0	0		27.8		28.0		28.1

Battery Number 9 (Cont'd)

1/23/53 TEST DISCHARGE

	Cell 1	Cell 2	Cell 3
OCV(m)	1.88	1.882	1.865
Specific gravity	1.065	1.075	floating
Temperature of cell	27.8°C	27.8°C	27.0°C
Room temperature	27.2	27.2	27.2

Discharged at 10 amps to 1 volt

Cell 1			Cell 2			Cell 3		
Min.	Volt	Temp.	Min.	Volt	Temp.	Min.	Volt	Temp.
0	2.16	27.7	0	1.97	28.0	0	1.95	28.0
5/60	1.86	"	5/60	1.83	28.0	5/60	1.85	"
2	1.84	27.8	7	1.83	28.0	6	1.80	28.1
6	1.82	27.8	12	1.80	28.2	15	1.74	28.4
15	1.78	27.9	15	1.78	28.2	20	1.68	28.4
22	1.74	28.0	21	1.73	28.3	25	1.60	28.4
27	1.70	28.0	30	1.59	28.4	28	1.50	28.5
30	1.655	28.1	33	1.42	28.4	30	1.35	28.5
33	1.58	28.2	34 15/60	1.20	"	31 42/60	1.00	28.5
34 1/2	1.50	28.2	34 37/60	1.00	28.4			
36	1.25	28.2						
36 35/60	1.00	28.2						
Room temp.		27.5			27.7			27.7
Watt hours	10.38			9.91			8.86	

APPENDIX 5
Table 1.9 (sheet 5)

Battery Number 9 (Cont'd)

1/24/53 RECOVERY DISCHARGE

	Cell 1	Cell 2	Cell 3
OCV(m)	1.90	1.92	1.91
Specific gravity	1.063	1.070	about 1.050
Temperature of cell	28.3°C	28.5°C	28.9°C

Discharged at 5 amps to one volt

Cell 1		Cell 2		Cell 3	
Min.	Volts	Min.	Volts	Min.	Volts
OCV	1.905	OCV	1.920	OCV	1.905
5/60	1.82	5/60	1.86	5/60	1.840
1	1.78	1	1.82	1	1.795
2	1.76	2	1.795	2	1.780
3	1.75	3	1.780	4	1.765
3 1/2	1.745	4	1.765	6	1.755
4 1/2	1.740	6	1.745	8	1.740
5	1.735	7	1.730	10	1.715
5 1/2	1.725	8	1.715	11	1.690
6	1.720	9	1.685	12	1.675
7	1.700	10	1.650	13	1.645
7 1/2	1.690	11	1.595	13 1/2	1.630
8	1.675	11 1/2	1.510	14	1.615
8 1/2	1.665	11 45/60	1.35	15	1.555
9	1.650	12	1.27	15 1/2	1.500
9 1/2	1.625	12 15/60	1.20	15 45/60	1.450
10	1.605	12 1/2	1.09	16	1.370
10 45/60	1.540	12 36.4/60	1.00	16 15/60	1.315
11 15/60	1.440			16 1/2	1.270
11 1/2	1.30			16 45/60	1.235
11 45/60	1.25			17	1.180
12 15/60	1.08			17 15/60	1.110
12 19.2/60	1.00			17 27.3/60	1.000
Final Temp.	28.2°C		28.6°C		28.9°C

APPENDIX 5
Table 1.10 Charge and Discharge Data (1.100 acid)

Battery No. 10

	1/23/53		
	Cell 1	Cell 2	Cell 3
OCV(m)	0.36	0.615	0.64
Date 1/25/53	Dumped and drained of electrolyte		
cc acid added	488	500	460
OCV(m)	0.03	0.85	1.28

PRE-TEST CHARGE

Date 1/27/53			
Cell temperature	27.8	28.0	27.8
Room temperature	26.5	26.5	26.5
OCV(m)	.02	.08	1.23
Specific gravity	1.040	Floating	Floating

Charged for 1 hour at 5 amp

hr	min	sec	Volts	Temp.	Volts	Temp.	Volts	Temp.
0	0	0	0.02	27.8	0.08	28.0	1.17	27.8
0	0	15	2.8		2.43		2.30	
		30	2.42		2.34		2.20	
	1	0	2.32		2.30		2.17	
	1	30	2.295		2.28		2.16	
	3		2.26		2.24		2.16	
	5		2.25	28.5	2.22	28.5	2.16	27.8
	10		2.26	28.8	2.20	28.7	2.17	27.9
	17		2.28	29.0	2.195	28.9	2.19	28.0
	25		2.28	29.3	2.20	29.0	2.20	28.0
	30		2.28	29.5	2.20	29.2	2.20	28.2
	42		2.22	30.5	2.20	29.5	2.20	28.2
	52		2.17	31.7	2.20	29.8	2.20	28.5
	58		2.15	32.2	2.20	30.0	2.20	28.8
	60	(off)						
	65			32.5		30.1		28.8

APPENDIX 5
Table 1.10 (sheet 2)

Battery No. 10 (Cont'd.)

PRE-TEST DISCHARGE

	Cell 1	Cell 2	Cell 3
Date 1/24/53			
Cell temperature	32.5	30.0	28.5
OCV(m)	1.91	1.91	1.93
Specific gravity	1.048	1.045	floating

Discharged at 5 amps to one volt

Temperature	32.3°		29.8°		28.0°	
	Min.	Volts	Min.	Volts	Min.	Volts
			OCV	1.895	OCV	1.905
	10 sec.	1.81	10 sec.	1.79	5 sec.	1.805
	30 sec.	1.80	1 min.	1.775	1 min.	1.795
	1 min.	1.79	2 "	1.76	2 "	1.775
	3 "	1.78	3 "	1.75	3 "	1.77
	6 "	1.69	5 "	1.725	5 "	1.75
	7 "	1.665	6 "	1.71	6 "	1.745
	8 "	1.615	8 "	1.67	7 "	1.735
	9 "	1.535	9 "	1.65	8 "	1.73
	10 "	1.395	10 "	1.61	9 "	1.72
	11 "	1.000	11 "	1.55	10 "	1.70
			12 "	1.45	11 "	1.68
	31.4 temp.		13 "	1.32	13 "	1.65
	rt = 26		14 "	1.195	14 "	1.63
			14½ "	1.10	15 "	1.60
			14-51/60	1.00	16 "	1.57
					17 "	1.53
			t = 30.0		18 "	1.48
					19 "	1.43
					20 "	1.37
					21 "	1.31
					22 "	1.25
					23 "	1.175
					23½ "	1.11
					23-3/4	1.05
					23-55/60	1.00
					28.2°C	
Watt hours	1.52		1.99		3.18	

APPENDIX 5
Table 1.10 (sheet 3)

Battery No. 10 (Cont'd.)

TEST CHARGE

	Cell 1	Cell 2	Cell 3
Date 1/21/53			
Cell temperature	29.5	29.1	28.1
Room temperature	26		
OCV(m)	0.62	1.86	1.84
Specific gravity	1.040	Floating	Floating

Charged to two hours at 5 amps

hr	min	sec	Volts	Temp.	Volts	Temp.	Volts	Temp.
0	0	0	0.62	29.5	1.86	29.1	1.84	28.1
		15	1.90		2.00		1.98	
		30	2.00		2.02		2.02	
	1		2.03		2.05		2.02	
	3		2.06	29.4	2.07	29.1	2.05	28.0
			$MgSO_4$ & Na_2SO_4 added				AD-X2 added	
	6		2.08	29.2	2.08	29.2	2.06	28.0
	7			29.5		29.1		28.0
	9		2.09	28.8	2.10	29.4	2.08	28.0
	12		2.10	29.0	2.12	29.4	2.105	28.5
	15		2.12	29.8	2.15	29.2	2.14	28.5
	30		2.16	31.5	2.205	29.5	2.21	28.5
	45		2.14	33.7	2.21	30.0	2.22	28.5
1	0		2.10	35.3	2.21	30.5	2.22	28.6
1	15		2.09	36.0	2.20	31.0	2.21	28.8
1	30		2.07	37.2	2.195	31.0	2.21	28.8
1	45		2.06	38.1	2.18	32.2	2.20	28.9
1	59		2.045	39.8	2.175	33.4	2.195	29.2
2		off charge						

APPENDIX 5
Table 1.10 (sheet 4)

Battery No. 10 (Cont'd.)

TEST DISCHARGE

	Cell 1	Cell 2	Cell 3
Date 1/4/53			
Room temperature	26.5	26.5	26.5
Cell temperature	38.0	32.8	29.1
OCV(m)	1.87	1.94	1.96
Specific gravity	1.065	1.055	1.055

Discharged at 10 amps to one volt

Temperature	37.8		32.5		29.1	
	Min.	Volts	Min.	Volts	Min.	Volts
	OCV	1.85	OCV	1.905	OCV	1.925
	5 sec.	1.705	5 sec.	1.77	5 sec.	1.805
	1 min.	1.66	1 min.	1.745	1 min.	1.78
	2 "	1.55	2 "	1.73	2 "	1.77
	3 "	1.385	3 "	1.715	3 "	1.76
	4 "	1.22	4 "	1.705	5 "	1.73
	4-55/60	1.00	5 "	1.68	7 "	1.705
			7 "	1.63	10 "	1.65
	temp.	36.5	8 "	1.585	12 "	1.61
			9 "	1.53	14 "	1.565
			10 "	1.45	15 "	1.53
			11 "	1.325	16 "	1.50
			12 "	1.21	17 "	1.46
			12-3/4'	1.095	18 "	1.41
			13	1.055	19 "	1.37
			13-1/4'	1.00	20 "	1.315
					21 "	1.265
			temp.	33.0	22 "	1.205
					23 "	1.135
					24 "	1.07
					24-55/60	1.00
					temp.	30.0
Watt hours	1.18		3.44		6.37	

APPENDIX 5
Table 1.10 (sheet 5)

Battery No. 10 (Cont'd.)

RECOVERY DISCHARGE

	Cell 1	Cell 2	Cell 3
Date 1/[illegible]/53			
Room temperature	24°C		
Cell Temperature	25.2	25.5	25.0
OCV(m)	0.10	1.30	1.82
Specific gravity	1.050	1.045	1.050

Min.	Volts
No recoup possible	

Min.	Volts
OCV	1.30
to below 1.00 V in less than one second	

5 amp temp. 25.0

Min.	Volts
OCV	1.825
5 sec.	1.67
1 min.	1.625
2 "	1.605
3 "	1.575
4 "	1.545
5 "	1.51
6 "	1.47
7 "	1.43
8 "	1.38
9 "	1.33
10 "	1.27
11 "	1.215
12 "	1.17
13 "	1.11
14 "	1.045
14-34/60	1.00

temp. - 25.2°

APPENDIX 5
Table 1.11 Charge and Discharge Data (1.100 acid)

Battery Number 11

January 23, 1953

	Cell 1	Cell 2	Cell 3
OCV(m)	0.315	0.835	1.395
Date 1/23/53	Dumped and drained of electrolyte		
cc acid added	599	594	598
OCV(m)	0.315	0.72	1.415

PRE-TEST CHARGE

Date 1/24/53			
Cell temperature	27.9°	28.15°	27.90°
Room temperature	27.5°	27.5°	27.5°
OCV(m)	0.28	0.72	1.42
Specific gravity	1.067	1.065	1.060

Charged for 1 hour at 5 amp.

hr	min	sec	Charging voltage	Temp.	Charging voltage	Temp.	Charging voltage	Temp.
0	0	0	0.295	27.9	0.385	28.15	1.325	27.9
0	1	0	1.978		2.050		2.020	
0	6	30	2.030	27.75	2.060	28.09	2.058	27.72
0	10	30	2.040	27.75	2.068	28.08	2.10	27.65
0	13	0	2.039		2.070		2.130	
0	18	0	2.045	27.79	2.080	28.07	2.140	27.70
0	22	0	2.059	27.60	2.10	28.05	2.159	27.79
0	29	0	2.085	27.8	2.125	28.1	2.170	27.75
0	34	0	2.110		2.139		2.175	
0	40	0	2.125	28.31	2.150	28.24	2.179	27.69
0	47	0	2.123		2.159		2.170	
0	53	0	2.135	28.48	2.170	28.31	2.173	27.65
0	58	0	2.138		2.179		2.170	
1	0	0		28.51		28.30		27.67

Room temperature = 27.0

APPENDIX 5
Table 1.11 (sheet 2)

Battery Number 11 (continued)

11/24/53

PRE-TEST DISCHARGE

	Cell 1	Cell 2	Cell 3
Specific gravity	1.070	1.070	1.065
OCV(m)	1.975	1.978	1.978
Temperature of cell	28.50	28.37	27.59

Discharged at 5 amps to one volt

Cell 1		Cell 2		Cell 3	
Min.	Volts	Min.	Volts	Min.	Volts
0	1.975	0	1.978	0	1.978
1 30/60	1.890	1	1.88	5/60	1.910
3	1.880	5	1.86	2	1.88
9	1.860	11	1.85	6	1.88
16	1.850	15	1.84	11	1.87
22	1.80	20	1.82	14	1.86
23 12/60	1.00	22	1.64	21	1.85
		22 13/60	1.00	28	1.81
				30	1.76
				30 45/60	1.35
				30 52/60	1.00
Temperature	28.09	Temperature	27.80	Temperature	26.72
Room Temperature	26.5	Room Temperature	26.3	Room Temp.	26.3
Watt hours	3.55		3.40		4.75

Battery Number 11 (continued)

1/24/53

TEST CHARGE

	Cell 1	Cell 2	Cell 3
Cell temperature	27.41	27.52	26.63
Room temperature	25.50	25.50	25.50
OCV(m)	1.92	1.92	1.90
Specific gravity	1.067	1.070	1.067

Charged at 5 amps for 2 hours

hr.	min.	sec.	Volts	Temp.	Volts	Temp.	Volts	Temp.
0	0	0	1.92		1.92		1.90	
0	2	15	2.0		1.99		1.99	
0	4	15		27.12		27.28		27.05
0	5	0	2.02		2.02		2.02	
0	5	45	AD-X2 added		$MgSO_4$+$NaSO_2$ added			
0	7	0		26.45		26.95		26.58
0	9	0	2.03	27.2	2.03	27.25	2.03	27.05
0	12	0	2.04	27.29	2.035	26.50	2.03	26.55
0	25	0	2.14	27.50	2.200	26.90	2.183	26.5
0	33	0	2.16	27.50	2.210	26.80	2.135	26.5
0	45	0	2.16	27.30	2.220	27.1	2.190	26.6
1	0	0	2.16	27.7	2.218	27.3	2.180	26.7
1	32	0	2.142		2.201		2.165	
1	47	0	2.140	28.2	2.210	27.8	2.160	27.1
1	56	0	2.140	28.2	2.210	27.9	2.160	27.1
Temperature				28.2		27.85		27.1
Room Temperature				26.2		26.2		26.2

APPENDIX 5
Table 1.11 (sheet 4)

Battery Number 11 (continued)

1/24/53

TEST DISCHARGE

	Cell 1	Cell 2	Cell 3
Room temperature	26.2	26.2	26.2
Cell temperature	28.1	27.7	26.9
OCV(m)	1.99	1.98	1.99
Specific gravity	1.095	1.097	1.080

Discharged at 10 amps to one volt

Cell 1			Cell 2			Cell 3		
Min.	Volts	Temp.	Min.	Volts	Temp.	Min.	Volts	Temp.
0	1.99	28.1	0	1.98	27.65	0	1.99	26.85
5/60	1.92	28.1	10/60	1.90		5/60	1.88	
3	1.90	28.1	3	1.87		6	1.85	
12	1.88	28.1	10	1.85		13	1.84	
21	1.85	28.1	16	1.84		22	1.82	
23	1.84	28.1	21	1.81		25	1.80	
25	1.84	28.1	24	1.74		30	1.76	
31	1.79	28.1	25	1.30		32	1.72	
33	1.71	28.1	25 6/60	1.00		33	1.60	
33 11/60	1.00	28.1				33 15/60	1.26	
						33 20/60	1.00	
Temperature					27.70			27.0
Room temperature		26.2			26.2			26.2
Watt hours	10.37			7.64			10.08	

APPENDIX 5
Table 1.11 (sheet 5)

Battery Number 11 (continued)

11/25/53

RECOVERY DISCHARGE

	Cell 1	Cell 2	Cell 3
Room temperature	24	24	24
Cell temperature	23.59	24.05	23.60
OCV(m)	1.925	1.925	1.915
Specific gravity	1.090	1.090	1.090

Discharged 5 amps tp one volt

Cell 1			Cell 2			Cell 3		
Min.	Volts	Temp.	Min.	Volts	Temp.	Min.	Volts	Temp.
0	1.925	23.60	0	1.920	24.1	0	1.915	23.8
30/60	1.850		15/60	1.870		15/60	1.840	
55/60	1.839		35/60	1.850		1 50/60	1.810	
1 15/60	1.830		1	1.835		2 40/60	1.805	
1 30/60	1.829		1 35/60	1.825		3 30/60	1.800	
3 15/60	1.820		2 15/60	1.820		4 40/60	1.790	
6 30/60	1.780		3 15/60	1.795		5 30/60	1.780	
8 15/60	1.700		3 50/60	1.780		7 10/60	1.760	
8 30/60	1.600		4 20/60	1.750		8 20/60	1.720	
8 50/60	1.320		4 45/60	1.720		8 40/60	1.710	
9 9/60	1.000	23.70	5 5/60	1.640		9 10/60	1.660	
			5 25/60	1.320		9 20/60	1.600	
			5 42/60	1.000	24.2	9 45/60	1.000	23.9
Room temperature		24			24			25

Table 1.12 Charge and Discharge Data (1.100 acid)

Battery Number 12

1/23/53

	Cell 1	Cell 2	Cell 3
OCV(m)	0.77	0.295	1.205
Date 1/23/53	Dumped and drained of electrolyte		
cc acid added	508	538	592
OCV(m)	0.17	1.515	1.17

PRE-TEST CHARGE

Date 1/24/53			
Cell temperature	28.3	28.8	28.9
Room temperature	27.5		
OCV(m)	0.30	0.86	1.18
Specific gravity	1.095	not floating	1.060

Charged for 1 hour at 5 amps

hr	min	sec	Charging voltage	Temp.	Charging voltage	Temp.	Charging voltage	Temp.
0	0	30	2.180		2.52		2.06	
0	1	30	2.125		2.425		2.075	
0	3		2.170	28.4	2.355	28.9	2.110	28.8
0	6		2.185		2.275		2.135	
0	12		2.210	28.6	2.225	29.2	2.145	28.8
0	23		2.225		2.185		2.165	
0	30		2.235	28.8	2.175	29.5	2.175	29.2
0	40		2.235	28.5	2.160	29.5	2.180	29.0
0	50		2.235	28.7	2.140	29.5	2.182	29.2
1	0	off	2.240	29.0	2.120	29.7	2.195	29.2
Final temperature				29.0		29.8		29.2

APPENDIX 5
Table 1.12 (sheet 2)

Battery Number 12 (continued)

Date 1/24/53

PRE-TEST DISCHARGE

	Cell 1	Cell 2	Cell 3
Specific gravity	1.097	not floating	1.065
OCV(m)	2.035	1.840	2.000
Temperature of cell	28.7	29.3	29.1
Temperature of room	26.4	---	---

Discharged at 5 amps to 1 volt

Cell 1			Cell 2			Cell 3		
Min.	Volts	Temp.	Min.	Volts		Min.	Volts	Temp.
0	2.025 OCV	28.7	0	1.740 OCV		0	1.985 OCV	29.1
0 10/60	1.94		5/60	1.50		5/60	1.925	
0 30/60	1.920		15/60	1.38		1	1.895	
1 30/60	1.910		30/60	1.28		2	1.885	
3	1.900		40/60	1.22		4	1.875	
6	1.885		50/60	1.18		6	1.870	
8	1.880		1	1.15		9	1.855	29.1
10	1.865	28.7	1 10/60	1.11		12	1.845	
12	1.860		1 20/60	1.08		15	1.835	
15	1.840	28.7	1 30/60	1.05		18	1.815	
18	1.820		1 40/60	1.01		21	1.795	
20	1.795		1 41.4/60	1.00		24	1.765	
21	1.775					26	1.745	
22	1.755					28	1.720	29.1
23	1.725					30	1.690	
24	1.700					32	1.655	
25	1.665					34	1.625	
25 30/60	1.650					36	1.580	
26	1.635					37	1.540	
26 30/60	1.620					37 30/60	1.480	
27	1.600					37 45/60	1.4	
28	1.580					37 55/60	1.28	
29	1.560					38	1.21	
30	1.520					38 10/60	1.11	
30 30/60	1.495					38 19.3/60	1.00	
30 45/60	1.460							
31	1.240							
31 15/60	1.02		Initial					
31 17.3/60	1.00		temperature	29.4				
Final temperature		23.8		29.4				29.2
Watt hours	4.65			0.17			5.65	

APPENDIX 5
Table 1.12 (sheet 3)

Battery Number 12 (continued)

Date 1/24/53

TEST CHARGE

	Cell 1	Cell 2	Cell 3
Cell temperature	29.5	29.3	29.2
Room temperature	26.0	---	---
OCV(m)	1.94	1.40	1.54
Specific gravity	1.100	not floating	1.065

Charged at 5 amps to 2 hours

hr.	min.	sec.	Volts	Temp.	Volts	Temp.	Volts	Temp.
0	0	0	1.940 OCV	28.1	1.365 OCV	29.0	1.900 OCV	29.0
0	0	30	2.020		1.955		2.000	
0	2	0	2.105	28.2	2.00	29.0	2.065	29.0
0	5	0		28.2		29.0		29.0
0	5 to 6				AD-X2 added			
0	6	30	2.120	28.2	2.050	29.0	2.080	29.0
0	7	30						29.0
0	8 to 9						$MgSO_4$ + Na_2SO_4 added	
0	9	30	2.135	28.2	2.065	30.0	2.085	28.0
0	12	0	2.140	28.2	2.075	30.3	2.095	28.0
0	18	0	2.155	28.2	2.085	30.3	2.115	28.0
0	26	0	2.195	28.3	2.085	30.0	2.145	28.2
0	33	0	2.220	28.6	2.080	30.2	2.175	28.3
0	43	0	2.245	28.8	2.070	30.2	2.195	28.5
0	54	0	2.255	29.0	2.065	30.2	2.205	28.8
1	0	0	2.255		2.055		2.205	
1	15	0	2.260	29.2	2.035	30.4	2.220	29.3
1	30	0	2.265	29.3	2.025	30.4	2.225	29.6
1	42	0	2.270	29.4	2.015	30.8	2.225	29.7
1	54	0	2.280	29.4	2.005	30.9	2.230	29.7
2	0	0	2.280	29.7	2.000	30.8	2.230	29.7
Final temperature				29.7		30.8		29.7

APPENDIX 5
Table 1.12 (sheet 4)

Battery Number 12 (continued)
Date 1/24/53

TEST DISCHARGE

	Cell 1	Cell 2	Cell 3
Cell temperature	29.2	30.3	29.2
Room temperature	26.5	26.5	26.5
OCV(m)	2.065	1.815	2.020
Specific gravity	1.105	1.040 (est)	1.080

Discharged at 10 amps to 1 volt

Cell 1 Min.	Cell 1 Volts	Cell 1 Temp.	Cell 2 Min.	Cell 2 Volts	Cell 2 Temp.	Cell 3 Min.	Cell 3 Volts	Cell 3 Temp.
0	2.055 OCV	29.2	0	1.645 OCV	30.8	0	2.000 OCV	29.4
5/60	1.95		0 5/60	1.36		5/60	1.900	
1	1.90		0 15/60	1.32		30/60	1.875	
1 30/60	1.885		0 25/60	1.27		2	1.860	
2	1.885		0 30/60	1.25		5	1.840	
5	1.865	29.2	0 35/60	1.23		8	1.820	
8	1.845		0 40/60	1.22		13	1.765	29.7
12	1.825	29.2	0 45/60	1.20		16	1.740	
16	1.780		0 50/60	1.18		18	1.720	
18	1.760	29.3	0 55/60	1.17		20	1.675	
20	1.735		1	1.16		22	1.635	
22	1.700	29.3	1 10/60	1.12		23	1.620	
24	1.640		1 15/60	1.11		24	1.595	
24 30/60	1.625		1 25/60	1.08		25	1.570	
25	1.605		1 30/60	1.07		26	1.550	
25 30/60	1.590		1 35/60	1.06		27	1.525	
26	1.575		1 45/60	1.03		28	1.500	
26 20/60	1.560		1 55/60	1.01		29	1.480	
26 40/60	1.550	29.4	1 57.0/60	1.00		30	1.460	
27	1.535					31	1.435	
27 15/60	1.525					32	1.410	
27 30/60	1.520					33	1.380	
28	1.505					33 15/60	1.375	
28 30/60	1.490					33 30/60	1.370	
29	1.480					34	1.355	
30	1.460					34 30/60	1.340	
31	1.440					35	1.320	
32	1.415					35 30/60	1.300	
33	1.395					36	1.265	
34	1.380	29.8				36 30/60	1.210	30.2
35	1.360					37	1.130	
36	1.340					37 15/60	1.08	
37	1.310					37 25/60	1.04	
37 30/60	1.280	30.0				37 32.0/60	1.00	
38	1.23							
38 15/60	1.18							
38 25/60	1.13							
38 30/60	1.10							
38 35/60	1.05							
38 40.7/60	1.00							
Final temperature		30.0			30.8			30.2
Watt hours	10.7k							

APPENDIX 5
Table 1.12 (sheet 5)

Battery Number 12 (continued)

Date 1/25/53

RECOVERY DISCHARGE

	Cell 1	Cell 2	Cell 3
Cell temperature	24.4	25.0	25.1
Room temperature	24.7	24.7	24.7
OCV(m)	1.945	1.005	1.925
Specific gravity	1.100	not floating	1.080

Discharged at 5 amps to onevolt

Cell 1			Cell 2			Cell 3		
Min.	Volts	Temp.	Min.	Volts	Temp.	Min.	Volts	Temp.
0	1.945	24.5	0	1.01	25.0	0	1.925	25.1
5/60	1.865			No recoup		5/60	1.86	
30/60	1.77			possible		30/60	1.81	
1	1.62					1	1.795	
1 15/60	1.30					30/60	1.78	
1 30/60	1.22					2	1.77	
1 45/60	1.12					3	1.72	
1 55/60	1.00					4	1.62	
						4 30/60	1.52	
						5	1.33	
						5 15/60	1.26	
						5 30/60	1.22	
						5 45/60	1.15	
						6	1.07	
						6 11/60	1.00	
Final temperature		24.5						25.1

APPENDIX 5
Table 1.13 Charge and Discharge Data (1.100 acid)

Battery Number 13

Date 1/24/53

	Cell 1	Cell 2	Cell 3
OCV(m)	0.31	1.245	0.03
Date 1/24/53	Dumped and drained of electrolyte		
	Filled with 1.103 acid (26.4°)		
cc acid added	643	744	500
OCV(m)	0.287	1.26	0.487

PRE-TEST CHARGE

Date 1/25/53			
Cell temperature	24.8	25.0	24.8
Room temperature	25		
OCV(m)	0.23	1.18	0.72
Specific gravity	1.062	1.050	floating

Charged for 1 hour at 5 amps

hr.	min.	sec.	Volts	Temp.	Volts	Temp.	Volts	Temp.
0	1	0	2.06	24.9	2.38	25.0	4.80	25.2
0	4	0	2.10	25.0	2.21	25.0	3.30	25.3
0	7	0	2.12	25.0	2.21	25.0	2.94	25.5
0	10	0	2.16	25.0	2.21	25.0	2.83	25.8
0	15	0	2.22	25.1	2.23	25.1	2.70	25.8
0	20	0	2.25	25.2	2.23	25.4	0.09	26.0
0	25	0	2.26	25.5	2.235	25.4	0.08	25.9
0	30	0	2.26	25.5	2.24	25.4	0.08	25.9
0	35	0	2.26	25.6	2.23	25.6	0.08	26.0
0	40	0	2.27	25.8	2.23	25.8	0.08	26.0
0	45	0	2.27	25.9	2.22	25.8	0.08	26.0
0	50	0	2.27	25.9	2.22	26.0	0.08	26.0
0	55	0	2.27	26.0	2.215	26.0	0.08	26.1
0	59	0	2.27	26.0	2.21	26.0	0.08	26.1
0	60	0	Current cut					

APPENDIX 5
Table 1.13 (Sheet 2)

Battery Number 13 (Cont'd)

Date 1/25/53 PRE-TEST DISCHARGE

	Cell 1	Cell 2	Cell 3
Specific gravity	1.068	1.050	Floats
OCV(m)	1.985	1.99	0.01
Temperature cell	26.0	26.0	26.1
Room temperature	25.8	25.8	25.8

Discharged at 5 amps to 1 volt

Cell 1			Cell 2			Cell 3		
Min.	Volts	Temp.	Min.	Volts	Temp.	Min.	Volts	Temp.
OCV	1.965		OCV	1.965		Will not sustain		
5 sec.	1.895		5 sec.	1.91				
.5	1.89		1	1.875				
3	1.88		2	1.865				
5	1.87		4	1.845				
10	1.855		5	1.84				
12	1.85		9	1.81				
14	1.840		10	1.80				
16	1.835		12	1.77				
18	1.820		14	1.725				
20	1.785		15	1.685				
21	1.740		16	1.615				
22	1.460		17	1.46				
22:31	1.000	26.2	18	1.25				
			19	1.07				
			19:33	1.00	26.5			
Watt hours	3.43			2.79			0.00	

APPENDIX 5
Table 1.13 (Sheet 3)

Battery Number 13 (Cont'd)

1/25/53 TEST CHARGE

	Cell 1	Cell 2	Cell 3
Cell Temperature	26.5	26.5	26.5
Room Temperature	26.0	26.0	26.0
OCV(n)	1.92	1.845	00.0
Specific gravity	1.067	1.050	Floats

Charged at 5 amps for two hours

hr.	min.	sec.	Volts	Temp.	Volts	Temp.	Volts	Temp.
0	0	15	1.96		2.01		0.08	
0	1	0	1.98	26.7	2.03	26.5	0.08	26.7
			Add $MgSO_4$ and Na_2SO_4					
0	3	0	2.02	26.6	2.045	26.5	0.08	26.7
0	6	0	2.04	25.9	2.06	26.7	0.08	26.8
0	8	0	2.04	26.0	2.08	26.7	0.08	26.8
							Add AD-X2	
0	10	0	2.045	26.0	2.085	26.7	0.08	27.0
0	12	0	2.05	26.0	2.10	26.7	0.08	27.5
0	15	0	2.07	26.0	2.14	26.7	0.08	27.8
0	30	0	2.265	26.5	2.20	26.8	0.08	27.6
0	45	0	2.27	26.8	2.20	27.0	0.08	27.5
1	0	0	2.27	27.0	2.20	27.1	0.09	27.5
1	15	0	2.27	27.3	2.195	27.2	0.08	27.4
1	30	0	2.265	27.6	2.20	27.2	0.085	27.5
1	45	0	2.265	27.8	2.20	27.5	0.085	27.5
1	59	0	2.265	28.0	2.20	27.8	0.085	27.8
2	00(off)							

Battery Number 13 (Cont'd)

Date 1/25/53 TEST DISCHARGE

	Cell 1	Cell 2	Cell 3
Cell temperature	28.0	27.8	27.7
OCV(m)	1.995	2.03	0.01
Specific gravity	1.082	1.053	Floats

Discharged at 10 amps to one volt

Min.	Volts	Temp.	Min.	Volts	Temp.	Min.	Volts	Temp.
OCV	1.97	28.0	OCV	1.98	27.8	Dead will not sustain		
5 sec.	1.875		5 sec.	1.90		5 amp.		
1	1.85		1	1.865				
2	1.84		2	1.85				
3	1.84		3	1.845				
5	1.835		5	1.835				
10	1.815		10	1.805				
12	1.805		12	1.79				
15	1.785		15	1.76				
17	1.75		16	1.75				
19	1.68		17	1.725				
20	1.55		18	1.70				
20:55	1.00	28.0	19	1.65				
			20	1.55				
			21	1.295				
			22	1.045				
			22:13	1.00	28.0			

Watt hours	6.19	6.43	0.00

APPENDIX 5
Table 1.13 (Sheet 4)

Battery Number 13 (Cont'd)

1/26/53 RECOVERY DISCHARGE

	Cell 1	Cell 2	Cell 3
OCV(m)	1.92	1.92	0.01
Specific gravity	1.080	1.070	Floating
Temperature cell	25.0	25.0	24.5
Room Temperature	24.3		

Discharged at 5 amps to one volt

Cell 1			Cell 2			Cell 3		
Min.	Volts	Temp.	Min.	Volts	Temp.	Min.	Volts	Temp.
OCV	1.905	25.0	OCV	1.915	25.0	No sustain		
5 sec.	1.845		5 sec.	1.842				
2	1.77		1	1.825				
3	1.73		2	1.81				
4	1.56		3	1.805				
4:$\frac{1}{2}$	1.25		6	1.775				
4:42	1.00	25.0	7	1.75				
			9	1.735				
			11	1.685				
			13	1.59				
			14	1.49				
			15	1.345				
			16	1.205				
			17	1.065				
			17:38	1.00	25.0			

APPENDIX 5

Table 1.14 Charge and Discharge Data (1.100 acid)

Battery Number 14

1/24/53

	Cell 1	Cell 2	Cell 3
OCV(m)	0.087	0.725	0.915
Date 1/24/53	Dumped and drained of electrolyte		
	Filled with 1.103 acid (26.4°)		
cc acid added	416	500	498
OCV(m)	0.065	0.045	1.595
	PRE-TEST CHARGE		
Date 1/25/53			
Cell temperature	24.8	25.2	24.8
Room temperature	25.5		
OCV(m)	.02	.09	1.59
Specific gravity	1.085	1.045	Not floating

Charged for 1 hour at 5 amp

hr	min	sec	Volts	Temp.	Volts	Temp.	Volts	Temp.
0	1	30	2.11	24.8	2.22	25.2	2.37	24.8
	5	40	2.10	25.2	2.22	25.4	2.34	24.9
	9	30	2.12		2.23		2.30	
	14	30	2.15		2.22		2.25	
	20	45	2.19	26.2	2.22	25.9	2.21	25.4
	33	30	2.24	26.6	2.23	26.25	2.15	25.9
	38	30	2.25		2.23		2.13	
	45	15	2.265	27.0	2.24	26.5	2.12	26.2
	52	50	2.28	27.2	2.24	26.8	2.10	26.4
	57	0	2.28	27.4	2.25	26.8	2.10	26.5
1	0	0	2.28		2.25		2.10	

APPENDIX 5
Table 1.14 (Sheet 2)

Battery Number 14 (Cont'd.)

PRE-TEST DISCHARGE

Date 1/25/53

	Cell 1	Cell 2	Cell 3
Cell temperature	27.3	26.7	26.4
OCV(m)	2.07	2.01	1.92
Specific gravity	1.085	1.055	not floating

Discharged at 5 amps to one volt

Temperature	27.3	26.7	26.4

Cell 1

Min	Sec	Volts
0	40	1.900
1	20	1.890
1	45	1.880
2	55	1.880
3	50	1.870
6	5	1.860
11	15	1.810
11	45	1.799
12	0	1.790
12	30	1.770
12	50	1.760
13	10	1.740
13	25	1.730
13	35	1.720
13	50	1.700
14	5	1.680
14	30	1.640
14	50	1.580
15	20	1.300
15	37	1.000

T - 27.3
R.T. - 26.0

Cell 2

Min	Sec	Volts
0	0	1.96
0	20	1.870
0	45	1.859
1	10	1.850
2	5	1.845
4	20	1.835
5	0	1.830
6	45	1.820
9	35	1.810
11	20	1.800
12	50	1.790
14	0	1.780
15	15	1.770
16	0	1.760
17	0	1.750
18	0	1.730
19	0	1.710
20	0	1.680
20	45	1.660
21	20	1.640
21	45	1.620
22	20	1.580
23	0	1.520
23	25	1.480
23	45	1.400
24	30	1.300
25	15	1.000

T - 26.85
R.T. - 26.0

Cell 3

Min	Sec	Volts
0	0	1.800
0	30	1.580
0	45	1.550
1	0	1.500
1	15	1.450
1	25	1.400
1	35	1.340
1	55	1.240
2	5	1.118
2	20	1.100
2	43½	1.000

T - 26.5

Watt hours	2.35	3.65	0.31

Battery Number 14 (Cont'd)

Date 1/25/53

TEST CHARGE

	Cell 1	Cell 2	Cell 3
Cell temperature	26.6	26.6	26.7
Room temperature	26.0		
OCV(n)	1.495	1.880	1.750
Specific gravity	1.085	1.050	Not floating

Charged at 5 amps for two hours

hr.	min.	sec.	Volts	Temp.	Volts	Temp.	Volts	Temp.
0	1	0	2.04		2.00		2.03	
0	3	0	2.08	26.6	2.04	26.6	2.06	26.3
0	4	0	Added AD-X2		$MgSO_4$+Na_2SO_4			
0	5	20	2.11	26.3	2.05	26.6	2.06	26.3
0	8	20	2.13	26.6	2.060	25.8	2.065	26.3
0	16	50	2.28	26.9	2.11	25.8	2.07	26.5
0	29	0	2.32	27.2	2.24	26.4	2.06	26.7
0	38	0	2.32	27.3	2.25	26.7	2.06	26.8
0	48	0	2.34	27.6	2.26	27.1	2.04	27.0
1	4	30	2.34	28.0	2.26	27.4	2.04	27.3
1	29	0	2.32	28.5	2.265	28.0	2.03	27.7
1	41	0	2.32	28.7	2.26	28.25	2.025	27.9
1	57	0	2.34	29.0	2.27	28.5	2.02	28.2
2	0	0	--	29.1	--	28.6	--	28.1

APPENDIX 5
Table 1.14 (Sheet 4)

Battery Number 14 (Cont'd)

Date 1/25/53 TEST DISCHARGE

	Cell 1	Cell 2	Cell 3
OCV(m)	2.035	1.985	1.890
Specific gravity	1.120	1.090	Not floating
Temperature cell	28.8	28.3	27.9

Discharged at 10 amps to one volt

Cell 1			Cell 2			Cell 3		
Min.	Volt	Temp.	Min.	Volt	Temp.	Min.	Volt	Temp.
0	2.03	28.8	0	1.97	28.2	0	1.840	27.8
25 sec.	1.840		15 sec.	1.84		10 sec.	1.68	
40 sec.	1.825		45 sec.	1.82		23 sec.	1.66	
50 sec.	1.820		1:20	1.825		45 sec.	1.64	
1:25	1.810		4:25	1.805		1:05	1.62	
3	1.800		5:30	1.79		1:23	1.60	
5	1.785		8:30	1.77		1:40	1.58	
6:50	1.76		10	1.75		1:55	1.55	
8:15	1.74		13:25	1.685		2:20	1.50	
9:05	1.72		14:05	1.67		2:50	1.42	
9:45	1.70		14:50	1.65		3:05	1.34	
10:40	1.67		16:05	1.61		3:30	1.22	
11:25	1.64		16:45	1.58		3:45	1.12	
11:55	1.60		17:35	1.52		4:08	1.00	27.85
12:40	1.56		18:25	1.46				
13:15	1.50		19:30	1.32				
13:45	1.46		19:50	1.29				
14:20	1.40		20:15	1.25				
15:10	1.27		20:45	1.18				
15:30	1.24		21:10	1.10				
16:05	1.19		21:30	1.06				
16:35	1.10		21:48	1.00	28.5			
16:55	1.00	29.2						

Room Temperature 25.5

Watt hours	4.63	6.01	1.01

APPENDIX 5
Table 1.14 (Sheet 5)

Battery Number 14 (Cont'd)

1/26/53 RECOVERY DISCHARGE

	Cell 1	Cell 2	Cell 3
OCV(m)	1.93	1.88	1.64
Specific gravity	1.117	1.072	Not floating
Temperature cell	23.9°	24.3°	23.9°

Discharged at 5 amps to one volt

Cell 1			Cell 2			Cell 3		
Min.	Volt	Temp.	Min.	Volt	Temp.	Min.	Volt	Temp.
0	1.93[5]	23.9	0	1.88	24.3	0	1.64	23.8
15 sec.	1.40		15 sec.	1.63		13 sec.	1.00	23.8
1	1.20		30 sec.	1.53				
1:25	1.00	23.9	45 sec.	1.40				
			1	1.27				
			1:15	1.20				
			1:30	1.06				
			1:33	1.00	24.3			

Room Temperature 24.5

APPENDIX 5
Table 1.15 Charge and Discharge Data (1.100 acid)

Battery Number 15

	Cell 1	Cell 2	Cell 3
O.C.V.(m)	0.07	0.665	0.925

Date 1/24/53 Dumped and drained of electrolyte

Filled with 1.103 acid at 26.4°

CC of acid added	580	600	536
OCV(m)	0.07	0.12	1.60

PRE-TEST CHARGE

	Cell 1	Cell 2	Cell 3
Date 1/25/53			
Cell temperature	24.5	25.0	24.8
Room temperature	25.1	25.1	25.1
OCV(m)	.02	.04	1.82
Sprecific gravity	1.072	1.060	Floating

Charged for 1 hour at 5 amp

hr.	min.	sec.	Volt	Temp.	Volt	Temp.	Volt	Temp.
0	0	00	0.02	24.8	0.05	25.0	1.84	24.8
		05	2.9		2.65		1.98	
	1	00	2.2		2.44		2.00	
	3	00	2.15	24.8	2.24	25.0	2.04	24.8
	10	00	2.13	25.2	2.20	25.1	2.12	25.0
	17	00	2.142		2.195		2.14	
	30		2.195	26.0	2.20	26.0	2.16	25.2
	45		2.24	26.5	2.20	26.2	2.16	25.8
	58		2.25	26.6	2.21	26.3	2.16	26.0
1	0	0	current off					
Final temperature				26.6		26.3		26.0

1/25/53

PRE-TEST DISCHARGE

	Cell 1	Cell 2	Cell 3
OCV(m)	2.20	2.00	1.985
Specific gravity	1.072	1.050	Floating
Temperature of cell	26.7	26.2	26.0

Discharged at 5 amps to one volt

Cell 1			Cell 2			Cell 3		
Min:sec	Volts	Temp.	Min:sec	Volts	Temp.	Min:sec	Volts	Temp.
0:00	1.982	26.5	0:00.	1.98	26.3	0:00	1.96	26.2
0:05	1.92		:05	1.92		:05	1.89	
:30	1.90		:30	1.90		:30	1.87	
1:00	1.885		1:00	1.885		1:00	1.86	
3:00	1.87		3:00	1.865		3:00	1.84	
5:00	1.855	26.7	5:00	1.86		5:00	1.83	26.2
7:00	1.82		10:00	1.83		10:00	1.80	
9:00	1.40		12:00	1.82	26.3	14:00	1.78	
9:12	1.10		13:00	1.80		18:00	1.76	26.5
9:16	1.00	26.7	15:00	1.76		20:00	1.745	
			16:00	1.72		25:00	1.70	
			17:00	1.25		27:00	1.675	26.6
			17:02	1.00		29:00	1.64	
						30:00	1.61	
						31:00	1.58	
						:30	1.56	
Final temp.	26.7		Final Temp.	26.5		32:00	1.53	
						:30	1.48	
						:45	1.46	
						33:00	1.43	
						:15	1.39	
						:30	1.36	
						:45	1.33	
						34:00	1.30	
						:15	1.28	
						:30	1.25	
						:45	1.23	
						35:00	1.21	
						:15	1.18	26.8
						:30	1.16	
						:45	1.15	
						36:00	1.12	
						:15	1.09	
						:30	1.05	
						:46	1.00	26.8
						Final Temp.	26.8	
Watt hours	1.40			2.58			5.19	

1/25/53

TEST CHARGE

	Cell 1	Cell 2	Cell 3
Specific gravity	1.072	1.063	Floating
OCV(m)	1.95	1.93	1.83
Cell Temperature	26.3	26.4	26.8

25 Jan 53 — Charged 5 amp for 2 hours

hr.	min.	sec.	Volts	temp.	Volts	temp.	Volts	temp.
0	0	0	1.95	26.3	1.93	26.3	1.84	26.8
	0	5	2.02		2.00		1.94	
	2	0	2.08	26.3	2.04	26.3	1.98	26.8
	4	0	2.10	26.3	2.065	26.3	2.02	26.8
					added AD-X2			
	6	0						
		30	2.12	26.3	2.08	26.5	2.045	26.8
							$MgSO_4$ + Na_2SO_4 added	
	9	0	2.14	26.3	2.09	26.8	2.065	26.0
	12	0	2.20	26.3	2.11	27.0	2.085	26.0
	17	0	2.26	26.5	2.18	27.0	2.12	26.2
	28	0	2.27	26.8	2.22	27.0	2.16	26.6
	36	0	2.28	27.0	2.22	27.0	2.16	26.8
	45	0	2.28	27.0	2.23	27.0	2.16	27.0
	60	0	2.28	27.2	2.235	27.1	2.165	27.1
1	15	0	2.28	27.4	2.24	27.4	2.16	27.3
1	23	0	2.280	27.7	2.240	27.6	2.155	27.5
1	35	0	2.275	27.7	2.240	27.8	2.155	27.6
1	47	0	2.270	27.8	2.240	27.9	2.155	27.8
1	59	0	2.265	27.8	2.240	27.9	2.150	27.9

Final Temp. 27.8 — Final Temp. 27.9 — Final Temp. 27.9
Room Temp. 25.8

Battery Number 15 (continued)

TEST DISCHARGE

	Cell 1	Cell 2	Cell 3
OCV(m)	2.015	2.00	1.99
Specific gravity	1.090	1.095	1.052
Cell Temperature	27.6	27.8	27.8

25 Jan 53

Discharged at 10 amps to 1 volt

min.	sec.	Volt	Temp.	min.	sec.	Volt	Temp.	min.	sec.	Volt	Temp.
0	0	2.005	27.7	0	00	1.985	27.8	0	00	1.96	28.0
	05	1.92			05	1.50			05	1.68	
	30	1.89			30	1.52			30	1.64	
1	00	1.88		1	00	1.52		1	00	1.635	
3	00	1.86	27.7		30	1.54		2	00	1.675	
5	00	1.84		2	00	1.54		3	00	1.657	
6	00	1.835		3	00	1.54		4	00	1.64	
7	00	1.82		5	00	1.54		5	00	1.63	
8	00	1.81		6	00	1.53		6	00	1.72	
9	00	1.795	27.8	7	00	1.52		7	00	1.718	
10	00	1.77		10	00	1.50		10	00	1.68	
11	00	1.745		12	00	1.47	28.0	12	00	1.66	28.1
12	00	1.715		14	00	1.44		14	00	1.625	
13	00	1.67		15	00	1.42		18	00	1.58	28.2
14	00	1.62		17	00	1.37		20	00	1.54	
	30	1.57	27.8	19	00	1.29		22	00	1.50	
15	00	1.52			30	1.26		24	00	1.44	
	30	1.44		20	00	1.16		25	00	1.40	28.6
16	00	1.38			15	1.06		26	00	1.34	
	15	1.34		20	23	1.00		27	00	1.20	
	30	1.30							15	1.14	
	45	1.26							30	1.09	
17	00	1.20							45	1.06	
	15	1.15						28	00	1.04	
	30	1.10							15	1.02	
	45	1.07						28	30	1.00	
18	00	1.02									
	07	1.00									

Final Temp.	27.9	Final Temp.	28.1	Final Temp.	28.8
Watt hours	5.13		4.95		7.44

APPENDIX 5
Table 1.15 (sheet 5)
Battery Number 15 (continued)

1/26/53

RECOVERY DISCHARGE

	Cell 1	Cell 2	Cell 3
OCV(m)	1.945	1.930	1.880
Specific gravity	1.080	1.087	1.053
Cell Temperature	24.5	25.0	25.1
Room Temp	24.6		

Discharge at 5 amps to 1 volt

Min.	Sec.	Volt	Temp.	Min.	Sec.	Volt	Temp.	Min.	Sec.	Volt	Temp.
0	0	1.955	24.5	0	0	1.935	25.0	0	0	1.885	25.2
	05	1.880			05	1.730			05	1.580	
	30	1.840			30	1.705			30	1.560	
1	00	1.835		1	00	1.690		1	30	1.510	
2	00	1.810		2	00	1.680		3	00	1.515	
3	00	1.785	24.5	3	00	1.670		5	00	1.520	
4	00	1.755		4	000	1.660		7	00	1.500	
5	00	1.685		6	00	1.625		9	00	1.485	
6	00	1.620		8	00	1.580		11	00	1.465	
	15	1.590			30	1.560		13	00	1.445	
	30	1.550		9	00	1.520		15	00	1.415	
	45	1.480			30	1.460		17	00	1.375	25.6
7	00	1.410		10	00	1.180		18	00	1.360	
	15	1.370			15	1.07		19	00	1.340	
	30	1.350		10	21	1.00		20	00	1.300	
8	00	1.260							30	1.280	
	15	1.100						21	00	1.245	
8	19	1.000							15	1.220	
									30	1.200	
									45	1.175	
								22	00	1.150	
									15	1.120	
									30	1.090	
									45	1.065	
								23	00	1.050	
									15	1.035	
									30	1.020	
									45	1.010	
								23	52	1.000	

Final Temp. 24.5 Final Temp. 25.0 Final temp. 25.8

APPENDIX 5
Table 1.16 Charge and Discharge Data (1.100 acid)

Battery Number 16

January 25, 1953

	Cell 1	Cell 2	Cell 3
OCV(m)	0.96	1.17	1.11

January 25, 1953 Dumped and Drained of Electrolyte

CC acid added	722	632	660
OCV(m)	1.591	1.621	1.591

PRE-TEST CHARGE

Date 1/26/53 Charged for 1 hour at 5 amps.

Cell temperature	24.0	24.5	24.5
Room temperature	24.8	24.8	24.8
OCV(m)	1.55	1.49	1.54
Specific Gravity	1.052	1.060	1.065

hr.	Min.	sec.	Volt	Temp.	Volt	Temp.	Volt	Temp.
0	0	20	1.93	24.0	2.02	24.5	1.99	24.5
0	1	0	1.94		2.02		2.01	
0	7	0	1.99	24.7	2.08	24.7	2.10	24.6
0	14	0	2.01	24.7	2.11	24.7	2.12	24.6
0	30	0	2.02	24.8	2.12	24.8	2.18	24.6
0	38	0	2.04	25.2	2.14	24.8	2.15	24.9
0	47	0	2.08	25.2	2.16	24.9	2.165	24.9
0	59	0	2.14	25.8	2.16	25.0	2.18	25.0
0	60	0	current cut					

APPENDIX 5
Table 1.16 (sheet 2)

Battery Number 16 (Cont'd)

PRE-TEST DISCHARGE

	Cell 1	Cell 2	Cell 3
OCV(m)	2.005	2.01	2.01
Specific Gravity	1.060	1.060	1.067
Temperature of cell	25.8	25.0	25.0

1/26/53 Discharged at 5 amps to one volt

Min.	Volts	Temp.	Min.	Volts	Temp.	Min.	Volts	Temp.
OCV	1.95	25.8	OCV	1.97	25.5	OCV	1.96	25.5
5/60	1.885		5/60	1.925		5/60	1.92	
1	1.845		1	1.905		2	1.89	
2	1.81		2	1.89		5	1.88	
3	1.785		3	1.88		10	1.87	
4	1.725		5	1.87		15	1.86	
4:58	1.00	25.9	10	1.865		23	1.84	
			15	1.85		28	1.82	
			20	1.845		30	1.81	
			27	1.83		34	1.40	
			30	1.815		34:20	1.30	
			35	1.785		34:41	1.00	26.1
			37	1.73				
			38	1.21			R.Temp.	26°
			38:11	1.00	26.0			
Watt hours	0.71			5.82			5.25	

APPENDIX 5
Table 1.16 (sheet 3)

Battery Number 16 (Cont'd)

TEST CHARGE

	Cell 1	Cell 2	Cell 3
Cell Temperature	26.8	26.1	26.1
Room Temperature	25.5	25.5	25.5
OCV(n)	1.80	1.92	1.91
Specific Gravity	1.055	1.065	1.067

1/26/53 Charges at 5 amps for two hours

hr.	min.	sec.	Volts	Temp.	Volts	Temp.	Volts	Temp.
		15	1.945		1.955		1.955	
	1	00	1.96	26.2	1.965	26.1	1.965	26.1
	3	00	1.995	26.2	2.005	26.1	2.005	26.1
0	3 to 4	00	$MgSO_4$ + Na_2SO_4					
	5		2.04	25.8	2.03	26.2	2.03	26.1
0	6 to 7	00					added	AD-X2
	8		2.08	26.3	2.05	26.2	2.05	25.9
	10		2.12	26.3	2.06	26.3	2.055	26.0
	15		2.16	26.1	2.06	26.3	2.06	26.1
	21		2.175	26.5	2.07	26.2	2.075	26.2
	31		2.18	27.5	2.10	26.5	2.12	26.0
	45		2.19	28.0	2.16	26.8	2.18	26.5
1	0	0	2.20	28.5	2.18	27.0	2.20	27.0
1	30	0	2.20	29.5	2.20	27.5	2.22	27.5
1	47	0	2.20	30.0	2.22	28.0	2.23	28.0
1	58	0	2.20	30.0	2.23	28.0	2.24	28.0
2	0	0		30.0		28.0		28.0

APPENDIX 5
Table 1.16 (sheet 4)

Battery Number 16(Cont'd)

TEST DISCHARGE

	Cell 1	Cell 2	Cell 3
OCV(m)	2.10	2.06	2.05
Specific Gravity	1.075	1.070	1.090
Temperature Cell	30.0	28.5	28.0
Room Temperature	25.5°	25.5°	25.5°

1/26/53 Discharged at 10 amps to 1 volt

Min.	Volt	Temp.	Min.	Volt	Temp.	Min.	Volt	Temp.
OCV	2.04	30.0			28.5	OCV	1.97	28.5
5/60	1.925		OCV	1.99		5/60	1.91	
1	1.865		5/60	1.88		1	1.88	
2	1.83		1	1.85		3	1.87	
3	1.80		2	1.83		5	1.86	
4	1.785		3	1.825		9	1.855	
6	1.76		4	1.82		12	1.85	
8	1.755		7	1.815		15	1.84	
10	1.74		10	1.81		20	1.82	
11	1.73		12	1.805		25	1.80	
12	1.715		15	1.80		27	1.79	
15	1.63		17	1.79		28	1.78	
16	1.13		20	1.78		30	1.75	
16:07	1.00		22	1.775		31	1.71	
			24	1.765		32	1.56	
			26	1.76		32:51	1.00	
			28	1.75				
			30	1.74				
			31	1.72				
			32	1.71				
			33	1.70				
			34	1.66				
			35	1.40				
			35:28	1.00				

Temp. 29.8	Temp. 29.0	Temp. 28.5
R. Temp. 25.5	R. Temp. 26.0	R. Temp. 26.8
Watt hours 4.65	10.47	9.91

Battery Number 16 (Cont'd)

RECOVERY DISCHARGE

	Cell 1	Cell 2	Cell 3
OCV(m)	1.88	1.92	1.92
Specific gravity	1.065	1.070	1.092
Cell Temperature	26.3	26.3	26.0
Room Temperature	25.8	25.8	25.8

1/27/53 Discharged at 5 amps to 1 volt

Cell 1		Cell 2		Cell 3	
Min.	Volts	Min.	Volts	Min.	Volts
OCV	1.88	OCV	1.92	OCV	1.92
5/60	1.75	5/60	1.86	5/60	1.88
45/60	1.50	2	1.82	2	1.83
1	1.33	4	1.80	5	1.82
1:30	1.25	10	1.78	8	1.80
2	1.15	13	1.76	13	1.73
2:20	1.00	16	1.72	14	1.58
		17:30	1.34	14:15	1.37
		18	1.22	14:30	1.34
		18:10	1.00	15	1.27
				15:25	1.00
Temp. 26.3°		Temp. 26.3°		Temp.	
R. Temp. 26°		R. Temp. 24.5°		R. Temp. 24.5°	

APPENDIX 5
Table 1.17 Charge and Discharge Data (1.100 acid)

Battery Number 17

Date 1/25/53

	Cell 1	Cell 2	Cell 3
OCV(m)	0.175	0.125	0.31

Date 1/25/53 Dumped and Drained of Electrolyte

cc acid added	500	548	500
OCV(m)	-0.56	-0.635	-0.71

PRE-TEST CHARGE

Date 1/26/53

Cell temperature	24.5°	25.2°	24.8°
Room temperature	24.6°	24.6°	24.6°
OCV(m)	-0.485	-0.10	-0.57
Special gravity	Not floating	Not floating	Not floating

Charges for 1 hour at 5 amp

hr.	min.	sec.	Volt	Temp.	Volt	Temp.	Volt	Temp.
0	0	0	-0.485	24.5°	-.10	25.2	-0.57	24.8
0	1	30	0.50		0.29		0.73	
0	9	0	0.46		0.26		0.77	
0	20	0	0.61	24.7	0.25	25.4	1.12	25.3
0	31	0	0.74	24.9	0.25	25.5	1.45	25.8
0	42	0	1.19	25.3	0.25	25.6	1.70	26.2
0	52	0	1.35	25.7	0.25	25.8	1.89	26.6
0	58	0	1.44	26.1	0.25	25.9	1.99	27.0
1	0	0		26.15		25.8		27.1
				R. Temp. 25°		R. Temp. 25°		R. Temp. 25°

APPENDIX 5
Table 1.17 (sheet 2)

Battery Number 17 (Cont'd)

Date 1/26/53

PRE-TEST DISCHARGE

	Cell 1	Cell 2	Cell 3
OCV(m)	0.425	0.03	0.47
Specific gravity	Not floating	Not floating	Not floating
Temperature cell	26.3	26.1	27.3

Discharged at 5 amps to 1 volt

Cell 1			Cell 2			Cell 3		
Min.	Volts	Temp.	Min.	Volts	Temp.	Min.	Volts	Temp
0	0.411	26.3	0	-0.32	26.1	0	0.38	27.3
1/60	0.10					1/60	0.08	
Will not sustain 5 amp discharge			Will not sustain 5 amp discharge			Will not sustain 5 amp discharge		

Watt hours 0.00 0.00 0.00

APPENDIX 5
Table 1.17 (sheet 3)

Battery Number 17 (Cont'd)

Date 1/26/53 TEST CHARGE

	Cell 1	Cell 2	Cell 3
Cell temperature	26.6	26.1	26.8
Room temperature	25°	25°	25°
OCV(m)	0.29	0.01	0.36
Specific gravity	Not floating	Not floating	Not floating

Date 1/26/53 Charged at 5 amps for 2 hours

hr.	min.	sec.	Volt	Temp.	Volt	Temp.	Volt	Temp.
0	0	0	0.29	26.6	0.01	26.1	0.36	26.8
0	1	0	1.27		0.17		2.02	
			AD-X2 added					
0	3	0	--	26.6	--	26.2	--	27.0
					$MgSO_4$ + Na_2SO_4			
0	5	30	1.51	26.6	0.22	26.2	2.11	
0	8	0	1.52	26.7	0.23	25.9	2.12	27.2
0	10	0	1.53	--	0.23	--	2.12	
0	11	0	--	26.8	--	26.2	--	27.2
0	20	0	1.62	27.1	0.23	26.1	2.11	27.6
0	30	0	1.79	27.2	0.23	26.2	2.11	27.9
0	40	0	1.82	27.4	0.23	26.3	2.10	28.2
0	50	0	1.99	27.8	0.23	26.6	2.09	28.4
0	60	0	2.03	28.1	0.23	26.7	2.09	28.6
1	10	0	2.04	28.4	0.23	26.8	2.08	28.8
1	20	0	2.04	28.8	0.23	27.2	2.08	29.2
1	30	0	2.03	29.4	0.23	27.4	2.06	29.3
1	40	0	2.03	30.0	0.23	27.7	2.07	29.6
1	50	0	2.02	30.1	0.23	27.8	2.07	29.8
1	58	30	2.02	--	0.23	--	2.06	--
1	60	0	--	30.4	--	28.1	--	30.0

APPENDIX 5
Table 1.17 (sheet 4)

Battery Number 17 (Cont'd)

1/26/53 TEST DISCHARGE

	Cell 1	Cell 2	Cell 3
OCV(m)	1.83	0.10	1.81
Specific gravity	Just floats	Just floats	No float
Temperature cell	30.1	28.0	29.1
Room temperature	23.8°C		

Discharges at 10 amps to 1 volt

Time	Volts	Temp.	Time	Volts	Temp.	Time	Volts	Temp.
			CCV	0.07	28.4	CCV	1.78	29.5
OCV	1.80	30.1	Will not sustain 5 amp			2 sec.	1.50	
15	1.34		discharge			15 sec.	1.42	
30 sec.	1.00	30.4				30 sec.	1.34	
						57 sec.	1.00	29.6

Room temperature 25.5°C

Watt hours	0.11	0.00	0.21

APPENDIX 5
Table 1.17 (sheet 5)

Battery Number 17 (Cont'd)

1/27/53 RECOVERY DISCHARGE

	Cell 1	Cell 2	Cell 3
OCV(m)	1.07	0.005	1.22
Specific gravity	floating	floating	Not floating
Cell temperature	25.1°	25.5°	25.2°
Room temperature	26°	26°	26°

Discharged at 5 amps to one volt

Cell 1			Cell 2			Cell 3		
Min.	Volts	Temp.	Min.	Volts	Temp.	Min.	Volts	Temp.
0	1.07	25.1	0	0.005	25.5	0	1.22	25.2°
	Below 1.00 volt in 2 sec.			Will not sustain 5 amp discharge			Below 1.00 volt in 1 sec.	

APPENDIX 5

Table 1.18 Charge and Discharge Data (1.100 acid)

Battery Number 18

Date 1/25/53

	Cell 1	Cell 2	Cell 3
OCV(m)	1.265	1.405	1.39

Date 1/25/53 Dumped and Drained of Electrolyte

cc of acid added	718	734	694
OCV(m)	1.315	1.412	1.392

Date 1/26/53 PRE-TEST CHARGE

Cell temperature	24.3°C	24.8°C	25.1°C
Room temperature	24.8°C	24.8	24.8
OCV(m)	1.530	1.420 falling	1.405 falling
Specific gravity	1.067	1.094	1.088

Charged for 1 hour at 5 amp

hr.	min.	sec.	Volt	Temp.	Volt	Temp.	Volt	Temp.
0	0	0	1.500	24.3°C	1.375	24.9°C	1.335	25.1°C
0	0	15	2.38		2.00		2.01	
0	0	30	2.10		2.025		2.025	
0	1	0	2.085		2.045		2.045	
0	3	0	2.100		2.115		2.105	
0	9	0	2.115		2.155		2.145	
0	12	0		24.7		25.0		25.3
0	15	0	2.105		2.155		2.145	
0	30	0	2.105	24.9	2.160	25.0	2.155	25.3
0	45	0	2.105	25.0	2.155	25.0	2.165	25.3
0	53	0	2.10		2.155		2.165	
0	59	30	2.095	25.1	2.155	25.2	2.165	25.6
1	Off-charge			25.1		25.2		25.6

APPENDIX 5
Table 1.18 (Sheet 2)

Battery Number 18 (Cont'd)

1/26/53 PRE-TEST DISCHARGE

	Cell 1	Cell 2	Cell 3
OCV(m)	1.985	2.020	2.020
Specific gravity	1.050	1.103	1.092
Temperature cell	25.2°C	25.3°C	25.6°C

Discharged at 5 amps to one volt

Cell 1			Cell 2			Cell 3		
Min.	Volts	Temp.	Min.	Volts	Temp.	Min.	Volts	Temp.
0	1.980	25.2	0	1.995	25.6°	0 CV	1.985	26.1
5 sec.	1.940		5 sec.	1.960		5 sec.	1.955	
30 sec.	1.920		30 sec.	1.940		30 sec.	1.94	
1	1.915		2	1.925		1	1.935	
3	1.900		5	1.925		3	1.925	
6	1.880		9	1.920	25.7°	7	1.920	26.0
9	1.865		14	1.910		15	1.910	
12	1.860		22	1.895		21	1.900	
15	1.845		30	1.875		27	1.885	
18	1.835		34	1.860		30	1.880	
23	1.825		39	1.820		36	1.850	
27	1.800		41	1.735		39	1.835	
31	1.750		41:30	1.25		41	1.755	
32	1.720		41:39	1.00	25.8	41:15	1.670	
32:30	1.700					41:30	1.290	
33	1.650					41:40.9	1.00	26.1
33:30	1.50							
33:40	1.26							
33:50	1.06							
33:52.3	1.00	25.6°C						
Watt hours	5.16			6.53			6.55	

Battery Number 18 (Cont'd)

1/26/53 TEST CHARGE

	Cell 1	Cell 2	Cell 3
Cell temperature	25.6°C	25.9°C	26.0°C
Room Temperature	26.0°C	26.0°C	26.0°C
OCV(m)	1.905	1.955	1.935
Specific gravity	1.055	1.100	1.090

Charged at 5 amps for two hours

hr.	min.	sec.	Volts	Temp.	Volts	Temp.	Volts	Temp.
0	0	0	1.900	25.6°C	1.950	26.0°C	1.940	26.1°C
0	0	15	1.960		1.980		1.980	
0	1	0	1.985		2.005		1.995	
0	3	0	2.035	25.7	2.065	25.9	2.045	26.2
0	4	0	2.045	25.7	2.085 AD-X2 added	25.9	2.070	26.2
0	7	0	2.055		2.085		2.080	
0	7	30		25.7		25.7		26.2
0	8	0		25.7		25.7		26.2
							$MgSO_4+Na_2SO_4$	add
0	11	0	2.060		2.095		2.080	
0	11	30		25.7		25.9		26.3
0	30	0	2.085	25.9	2.140	26.0	2.125	25.4
1	0	0	2.075		2.165		2.175	
1	8	0		27.0		26.3		26.2
1	30	0	2.060	28.8	2.175	27.0	2.175	26.7
1	45	0	2.060	29.5	2.180	27.2	2.180	26.9
1	48	0	2.060	30.1	2.180	27.3	2.180	27.0
2	0	0	2.060	30.5	2.185	27.8	2.185	27.2
Final temperature				30.5		27.8		27.2

APPENDIX 5
Table 1.18 (Sheet 4)

Battery Number 18 (Cont'd)

1/26/53 TEST DISCHARGE

	Cell 1	Cell 2	Cell 3
OCV(m)	1.975	2.055	2.055
Specific gravity	1.050	1.110	1.105
Temperature cells	31°	28°	27°

Discharged at 10 amps to 1 volt

Cell 1			Cell 2			Cell 3		
Min.	Volt	Temp.	Min.	Volt	Temp.	Min.	Volt	Temp.
OCV	1.940	31.8	OCV	2.010	28.2	OCV	2.000	27.8
5 sec.	1.830		5 sec.	1.910		10 sec.	1.93	
1	1.820		30 sec.	1.880		30 sec.	1.910	
3	1.810	31.0	4	1.870	28.2	1	1.900	
6	1.795	31.0	8	1.860	28.2	4	1.895	27.8
10	1.780		12	1.855	28.2	7	1.890	
15	1.745	31.2	15	1.845	28.3	10	1.885	
18	1.725	31.3	18	1.840		13	1.880	27.9
20	1.700		21	1.840	28.3	15	1.875	
21	1.680		24	1.830		19	1.865	
22	1.660	31.6	27	1.820	28.3	23	1.860	28.0
23	1.640		30	1.805	28.3	27	1.850	
24	1.610		33	1.795		29	1.840	
25	1.575	31.8	35	1.785		31	1.835	28.0
26	1.510		37	1.770	28.3	33	1.830	
26:15	1.480		39	1.755		34	1.825	
26:30	1.450		41	1.710		36	1.815	
26:45	1.395	31.8	41:30	1.670		37	1.800	
27	1.32		41:45	1.645		38	1.790	
27:15	1.25		42	1.58		39	1.775	
27:30	1.18		42:30	1.23	28.4	39:30	1.760	
27:45	1.08		42:44.9	1.00	28.4°C	40	1.740	
27:55	1.00	31.5°C				40:15	1.720	
						40:30	1.700	
						40:45	1.66	
						41	1.52	
						41:15	1.30	
						41:25	1.21	
						41:30	1.10	
						41:33.6	1.00	28.2
Watt hours	7.93		12.93				12.79	

APPENDIX 5
Table 1.18 (Sheet 5)

Battery No. 18 (Cont'd)

1/27/53 RECOVERY DISCHARGE

	Cell 1	Cell 2	Cell 3
OCV(m)	1.195	1.950	1.945
Specific gravity	1.045	1.105	1.100
Temperature cell	25.8°C	26.0°C	26.4°C
Room temperature	25.8°C	25.8	25.8

Discharged at 5 amps to one volt

Cell 1			Cell 2			Cell 3		
Min.	Volts	Temp.	Min.	Volts	Temp.	Min.	Volts	Temp.
0	1.205	25.9	0	1.96	26.0	0	1.95	26.5
0	1.000		5 sec.	1.86		5 sec.	1.90	
30 sec.	fell right		30 sec.	1.84		30 sec.	1.88	
1	off		1	1.83		1	1.86	
			3	1.82		3	1.84	
			5	1.77		5	1.82	
			6	1.745		7	1.72	
			7	1.48		7:30	1.35	
			7:10	1.31		7:40	1.32	
			7:30	1.26		7:50	1.28	
			7:45	1.10		8	1.21	
			7:49	1.00	26.0	8:10	1.10	
						8:13	1.00	26.5

APPENDIX 5.

Table 2.19. Charge and discharge data (distilled water)

Battery Number 19
Date: 1/26/53

	Cell 1	Cell 2	Cell 3
OCV(m)	0.162	0.195	1.215
Date: 1/26/53	Dumped and drained of electrolyte Filled with Distilled Water 25.0°		
CC of water added	293	250	350
OCV(m)	0.145	0.18	1.185

PRE-TEST CHARGE

Date: 1/27/53			
Cell Temperature	25.2°C	25.2°C	25.0°C
Room Temperature	26.5	26.5	26.5
OCV(m)	.14	.16	1.04
Specific Gravity	Floating	Not floating	not floating

Charged for 1 hour at 5 amp

hr.	min.	sec.	volt.	temp.	volt.	temp.	volt.	temp.
0	0	30	2.29		2.30		2.28	
0	1	00	2.24		2.28		2.23	
0	2	00	2.25		2.28		2.22	
0	3	00	2.25	25.3	2.28	25.4	2.22	25.0
0	6	00	2.25	25.6	2.26	25.7	2.20	25.3
0	15	00	2.26	26.1	2.265	26.1	2.20	25.8
0	30	00	2.26	26.9	2.265	26.8	2.19	26.2
0	40	00	2.265	27.3	2.26	27.1	2.185	26.8
0	50	00	2.265	27.6	2.26	27.4	2.18	27.0
0	58	00	2.26	27.8	2.26-	27.7	2.17	27.1

APPENDIX 5. Table 2.19 (sheet 2)

Battery Number 19 (Continued)
Date: 1/27/53

PRE-TEST DISCHARGE

	Cell 1	Cell 2	Cell 3
OCV(m)	1.98	1.98	1.95
Specific gravity	floating	floating	floating
Temperature of Cell	27.8°C	27.8°C	27.2°C
Room temperature	26.5	26.5	26.5

Discharged at 5 amps to one volt

Cell 1			Cell 2			Cell 3		
Min.	Volts	Temp.	Min.	Volts	Temp.	Min.	Volts	Temp.
:05	1.87		:05	1.75	27.6	:05	1.75	27.6
:30	1.84		:30	1.70		:30	1.71	
1:00	1.83		:45	1.68		1:00	1.69	
2	1.81		1:00	1.67		2	1.43	
3	1.80		2	1.63		3	1.38	
4	1.79		3	1.35		4	1.33	
5	1.78		4	1.38		5	1.30	
6	1.77		7	1.32		6	1.30	
8	1.74$_5$		8	1.28		6:15	1.40	
11	1.70		10	1.20		7	1.38	
15	1.60		12	1.18		9	1.32	
20	1.45		14	1.10		10	1.30	
24:43	1.00		15:41	1.00		13	1.20	
						19	1.10	
						19:12	1.00	
Final Temperature		29.2°C			27.9°C			28.1°
Watt hours	3.29			1.71			2.07	

APPENDIX 5. Table 2.19 (sheet 3)

Battery Number 19 (continued)
Date: 1/27/53

TEST CHARGE

	Cell 1	Cell 2	Cell 3
Cell temperature	33.0°C	33.3°C	33.3°C
Room temperature	27.2	27.2	27.2
OCV(m)	1.90	1.90	1.86
Specific gravity	floating	floating	floating

Charged at 5 amps for 2 hours

Hr.	Min.	Sec.	Volts	Temp.	Volts	Temp.	Volts	Temp.
0	0	15	2.04		2.04		2.00	
0	1	30	2.08	28.0	2.08	28.3	2.04	28.3
0	3	00	2.10	28.0	2.10	28.3	2.06	28.3
			$MgSO_4$ + Na_2SO_4 added					
0	4	30	2.12	27.8	2.12	28.4	2.08	28.3
							Treated with AD-X2	
0	7	00	2.14	27.8	2.14	28.2	2.09	28.2
0	10	00	2.16	28.0	2.16	28.3	2.11	29.0
0	20	00	2.22	28.0	2.24	28.6	2.14	29.0
0	35	00	2.24	28.5	2.25	29.0	2.16	29.0
1	00	00	2.26_5	29.2	2.25	29.3	2.15_5	29.3
1	19	00	2.26	29.8	2.25_5	29.8	2.16	29.7
1	38	00	2.27	30.0	2.26	30.0	2.17	29.8
1	45	00	2.27	30.2	2.26	30.1	2.17	30.0
1	59	00	2.27_5	30.4	2.26_5	30.3	2.18	30.1

APPENDIX 5. Table 2.19 (sheet 4)

Battery 19 (continued)
Date: 1/27/53

TEST DISCHARGE

	Cell 1	Cell 2	Cell 3
OCV(m)	2.01	2.01	1.99
Specific gravity	1.075	floating	floating
Temperature of cell	30.5°C	30.5°C	30.2°C
Room temperature	28.0°C	28.0°C	28.0°C

Discharged at 10 amps to 1 volt

Min.	Volts	Temp.	Min.	Volts	Temp.	Min.	Volts	Temp.
:05	1.84		:05	1.77	30.0	:05	1.80	29.5
:30	1.79		1:00	1.70		:30	1.78	
1:00	1.77		2:00	1.68		2:00	1.74	
2	1.75$_5$		5	1.63		5	1.70	
3	1.72		10	1.51		11	1.61	
7	1.66		15	1.38		15	1.52	
8	1.65		20	1.17		20	1.39	
10	1.61		21	1.12		25	1.25	
12	1.57		22	1.08		30	1.08	
15	1.47		23	1.04		32	1.04	
20	1.25		24:01	1.00	31.0	33:22.5	1.00	31.0
24:36.5	1.00	30.5						

Watt hours	8.03	6.12	5.71

APPENDIX 5. Table 2.19 (sheet 5)

Battery 19 (continued)
Date: 1/28/53

RECOVERY DISCHARGE

	Cell 1	Cell 2	Cell 3
OCV(m)	1.91	1.90	1.86
Specific gravity	1.075	1.040	1.050
Cell temperature	28.0°C	28.0°C	27.6°C
Room temperature	26.5	26.5	26.5

Discharged at 5 amps to 1 volt

Cell 1			Cell 2			Cell 3		
Min.	Volts	Temp.	Min.	Volts	Temp.	Min.	Volts	Temp.
:05	1.78		:05	1.74	27.8	:05	1.72	27.0
:30	1.73		:30	1.70		:30	1.68	
1:00	1.70		2:00	1.66		2:00	1.60	
2	1.68		3	1.64		5	1.52	
5	1.60		5	1.60		10	1.34	
10	1.40		10	1.46		15:09	1.00	27.5
15	1.26		15	1.33				
20	1.18		20	1.25				
25	1.04		25	1.18				
25:33	1.00	28.0°	30	1.05				
			30:48	1.00	28.2			

APPENDIX 5.

Table 2.20. Charge and discharge data (distilled water)

Battery Number 20

1/26/53

	Cell 1	Cell 2	Cell 3
OCV(m)	1.25	1.235	1.235
Date 1/26/53	Dumped and drained of electrolyte Distilled water 25.0°		
CC of water added	449	542	480
OCV(m)	1.27	1.275	1.225

PRE-TEST CHARGE

Date 1/27/53			
Cell temperature	25.1°C	25.55°C	25.07°C
Room temperature	25.5°	26.5°	26.5°
OCV(m)	1.00	0.660	0.980
Specific gravity	Not floating	Floating	Floating

Charged for 1 hour at 5 amp

hr.	min.	sec.	Volt	Temp.	Volt	Temp.	Volt	Temp.
0	5	0	2.12		2.09		2.08	
0	10	0	2.10		2.11		2.09	
0	16	0	2.11	25.18	2.11	25.55	2.10	25.30
0	27	0	2.11	25.38	2.11	25.70	2.10	25.4
0	36	0	2.11	25.55	2.11	25.68	2.10	25.5
0	51	0	2.11	25.85	2.12	26.0	2.10	25.6
0	58	0	2.10		2.115		2.09	
1	0	0		26.0		26.1		25.7

APPENDIX 5. Table 2.20 (sheet 2)

Battery Number 20 (Cont d)

1/27/53

PRE-TEST DISCHARGE

	Cell 1	Cell 2	Cell 3
OCV(m)	1.98	2.0	1.99
Specific gravity	floating	floating	floating
Temperature of cell	26.0	26.1	25.7
Room temperature	25.5	25.5	25.5

Discharged at 5 amps to one volt

Cell 1			Cell 2			Cell 3		
Min.	Volts	Temp.	Min.	Volts	Temp.	Min.	Volts	Temp.
0	1.98	OCV	0	1.98	26.1	0	1.96	25.8°
1	1.86		5 sec	1.92		5 sec	1.89	
3	1.83		3	1.89		13	1.83	
10	1.80	25.9	15	1.85	26.12	21	1.80	
17	1.77	26.0	30	1.78	26.15	25	1.79	
24	1.74	26.0	34	1.55		30	1.77	
27	1.72	26.05	34:30	1.30		36	1.68	
32	1.68		34:57	1.00	26.3	38	1.20	
35:15	1.20					38:15	1.00	26.1
35:26	1.00	26.2						
Room Temp. 25.5			Room Temp. 27°			Room Temp. 27.5		
Watt hours 5.14			5.27			5.69		

APPENDIX 5. Table 2.20 (sheet 3)

Battery Number 20 (Cont'd)

1/27/53

TEST CHARGE

	Cell 1	Cell 2	Cell 3
Cell temperature	26.3°	26.4°	26.2°
Room temperature	27.0	27	27
OCV(m)	1.88	1.90	1.86
Specific gravity	floating	floating	floating

Charged at 5 amps for two hours

hr.	min.	sec.	Volts	Temp.	Volts	Temp.	Volts	Temp.
0	0	0	1.88	26.3	1.90	26.4	1.86	26.2
0	2	0	1.98	26.3	2.00	26.4	1.99	26.2
0	3	0	2.02	26.3	2.04	26.4	2.02	26.2
0	5	0			(AD-X2 added)			
0	7	0					($MgSO_4$+Na_2SO_4)	
0	9	0	2.09	26.3	2.07	27.3	2.08	25.5
0	18	0	2.11	26.4	2.09	28.0	2.09	25.7
0	34	0	2.14	26.65	2.11	27.5	2.10	25.9
1	1	0	2.14	27.1	2.12	27.1	2.11	26.3
1	31	0	2.15	27.7	2.125	27.3	2.12	26.7
1	58		2.16	28.0	2.14	27.4	2.13	26.8
2	0	0		28		27.4		27.0
				Room Temp. 28		Room Temp. 28		Room Temp. 28

APPENDIX 5. Table 2.20 (sheet 4)

Battery Number 20 (Cont'd)

1/27/53

TEST DISCHARGE

	Cell 1	Cell 2	Cell 3
OCV(m)	2.03	2.05	2.03
Specific gravity	1.050	1.065	1.065
Temperature of cell	28°	27.4	26.9
Room temperature	26°	26°	26°

Discharged at 10 amps to 1 volt

Cell 1			Cell 2			Cell 3		
Min.	Volt	Temp.	Min.	Volt	Temp.	Min.	Volt	Temp.
0	2.03							
20 sec	1.79	28.0	0	1.99	27.4	0	1.97	26.7
2	1.68		5 sec	1.90		5 sec	1.88	
5	1.62		4	1.86		9	1.82	
7	1.56		24	1.77		23:12	1.76	
15	1.50		30	1.72		28	1.73	
22	1.47		34	1.65		34	1.65	
29	1.40		37	1.54		39	1.50	
35	1.50		39	1.34		39:43	1.00	
36	1.20		39:58	1.00				
36:17	1.00	28.7			27.7			27.2
Room Temp.	27.5		Room Temp.	27.5		Room Temp.		27.5
Watt hours	9.13			11.64			11.56	

APPENDIX 5. Table 2.20 (sheet 5)

Battery Number 20 (Cont'd)

1/28/53

RECOVERY DISCHARGE

	Cell 1	Cell 2	Cell 3
OCV(m)	1.88⁵	1.90⁵	1.90
Specific gravity	floating	1.070	1.070
Cell temperature	27.8°	26.9°	26.7°
Room temperature	26	26	26

Discharged at 5 amps to one volt

Cell 1			Cell 2			Cell 3		
Min.	Volts	Temp.	Min.	Volts	Temp.	Min.	Volts	Temp.
0	1.88⁵	27.8	0	1.91	26.8	0	1.90	26.45
15 sec	1.81	27.8	5 sec	1.84		5 sec	1.84	
3	1.76		3	1.73		5	1.74	
9	1.55		6	1.58		8:30	1.33	
9:30	1.25		8	1.13		9	1.24	
10	1.10		8:10	1.00	26.9	9:31	1.00	26.4
10:10	1.00	26.7						
Room Temp.	26°		Room Temp.	26°		Room Temp.	26°	

APPENDIX 5.

Table 2.21. Charge and discharge data (distilled water)

Battery Number 21

1/26/53

	Cell 1	Cell 2	Cell 3
OCV (m)	0.085	0.07	1.295
Date 1/26/53	Dumped and drained of electrolyte Distilled water 25.0°		
CC of water added	625	547	597
OCV (m)	0.08	0.065	1.245

PRE-TEST CHARGE

Date 1/27/53			
Cell temperature	25.3°C	25.6°C	25.8°C
Room temperature	25.9°	25.9°	25.9°
OCV (m)	.07	.05	1.23 falling
Specific gravity	Not floating	Not floating	Not floating

Charged for 1 hr at 5 amp

hr.	min.	sec.	Volt	Temp.	Volt	Temp.	Volt	Temp.
0	0	00	.065	25.3°	.06	25.7°C	1.04 falling	25.9°C
0	0	5	2.75		2.10		2.06	
0	0	30	2.13		2.00		2.05	
0	1	0	2.30		1.98		1.99	
0	5	0	2.26		1.995		2.01	
0	10	0	2.24		2.025		2.04	
0	15	0	2.23	25.8	2.04	26.0	2.06	26.0
0	23	0	2.23		2.04		2.06	
0	30	0	2.235	26.1	2.04	26.4	2.06	26.2
0	40	0	2.240	26.4	2.040	26.3	2.060	26.3
0	50	0	2.240	26.7	2.045	26.6	2.065	26.6
0	59	0	2.245	26.8	2.060	26.7	2.075	26.8
0	60	0		Off Charge				
Final temperature				26.9°C		26.8°C		26.8°C

APPENDIX 5. Table 2.21. (sheet 2)

Battery Number 21 (Cont'd)

1/27/53 PRE-TEST DISCHARGE

	Cell 1	Cell 2	Cell 3
OCV (m)	1.98	1.955	1.960
Specific gravity	Not floating	Not floating	Not floating
Temperature of cell	26.9	26.7	26.7
Room temperature	25.5	25.5	25.5

Discharged at 5 amps to one volt

Cell 1				Cell 2			Cell 3	
Min. Sec.	Volts	Temp.	Min.	Volts	Temp.	Min.	Volts	Temp.
00	1.96	OCV	0:00	1.93	26.8	0:00	1.935	27.0
05	1.86	26.8	0:05	1.89		0:05	1.88	
30	1.835		0:30	1.83		0:30	1.875	
1 00	1.82		1:00	1.87		1:00	1.86	
2 00	1.80		2:00	1.86		2:00	1.857	
4 00	1.777		4:00	1.84		4:00	1.845	
7 00	1.745	26.8	7:00	1.83		7:00	1.84	27.0
10 00	1.72		10:00	1.82	26.8	10:00	1.83	
12 00	1.70		15.00	1.80		15:00	1.82	27.0
14 00	1.677		19:00	1.785	26.8	20:00	1.80	
16 00	1.65		24:00	1.76		25:00	1.795	27.0
18 00	1.62	26.9	27:00	1.72	26.9	28:00	1.78	
21 00	1.565		28:00	1.60		30:00	1.775	
22 00	1.52		28:10	1.10		33:00	1.76	
23 00	1.44		28:14	1.00	26.9	35:00	1.725	
23 15	1.25					36:00	1.70	
23 26	1:00	26.9				37:00	1.635	
						37:30	1.26	
						37:45	1.09	
						37:46	1.00	27.1
Room temperature		26.9			26.9			27.1
Watt hours	3.29			4.22			5.64	

APPENDIX 5. Table 2.21. (sheet 3)

Battery Number 21 (cont'd)

1/27/53

TEST CHARGE

	Cell 1	Cell 2	Cell 3
Cell temperature			
Room temperature	27.2°C	27.2°C	27.2°C
OCV (m)	1.880	1.855	1.840
Specific gravity	Not floating	Not floating	Not floating

Charged at 5 amps for two hours

hr.	min.	sec.	Volts	Temp.	Volts	Temp.	Volts	Temp.
0	0	00	1.875	27.0°C	1.850	27.0°C	1.845	27.3°C
0	0	05	2.00		1.90		1.90	
0	0	30	2.03		1.905		1.90	
0	1	00	2.07		1.92		1.92	
0	3	00	2.085	27.0	1.94	27.1	1.94	27.2
3:30 to 6:00			(AD-X2 added)			$MgSO_4+Na_2SO_4$ added		
0	6	30	2.115		1.98		1.98	
0	7	00		27.5		27.0		27.2
0	8	30		29.0				
0	10	00	2.135	29.6	2.000	26.8	2.000	27.5
0	15	00	2.16	29.5	2.02	26.8	2.02	27.5
0	30	00	2.245	28.3	2.045	27.0	2.040	27.7
0	48	00	2.265	28.0	2.075	27.0	2.080	27.8
0	60	00	2.265	28.0	2.080	27.1	2.090	27.9
0	75	00	2.275	28.2	2.100	27.2	2.100	28.1
0	90	00	2.280	28.5	2.115	27.5	2.115	28.1
0	114	00	2.280	28.8	2.125	28.0	2.120	28.5
0	119	00	2.280	28.8	2.125	28.0	2.120	28.6
0	120	00	off charge					
Final temperature				28.9		28.0		28.6

APPENDIX 5. Table 2.21. (sheet 4)

Battery Number 21 (cont'd)
1/27/53

TEST DISCHARGE

	Cell 1	Cell 2	Cell 3
OCV (m)	1.995	1.965	1.965
Specific Gravity	1.055	1.045	Not floating
Cell temperature	28.9	28.0	28.5
Room temperature	26.5	26.5	26.5

Discharged at 10 amps to 1 volt

Cell 1			Cell 2			Cell 3		
Min.	Volts	Temp.	Min.	Volts	Temp.	Min.	Volts	Temp.
0	1.985	28.9	0	1.95	28.0	0	1.94	28.2
:05	1.50		:05	1.88		:05	1.86	
:30	1.52		:30	1.86		:30	1.845	
1:00	1.50		1:00	1.857		1:00	1.838	
2:00	1.48		2:00	1.84		2:00	1.82	
3:00	1.46		3:00	1.837		6:00	1.815	
4:00	1.44		5:00	1.83	28.0	9:00	1.80	28.2
5:00	1.43		7:00	1.82	28.0	15:00	1.78	
6:00	1.39		10:00	1.81		20:00	1.765	28.3
7:00	1.38	28.9	15:00	1.798	28.0	25:00	1.75	28.4
8:00	1.37		20:00	1.778		30:00	1.73	
9:00	1.36		25:00	1.758		33:00	1.72	28.5
0:00	1.358	29.1	28:00	1.74	28.2	35:00	1.70	
2:00	1.33		30:00	1.73		37:00	1.68	
4:00	1.29	29.5	33:00	1.705		39:00	1.65	28.6
6:00	1.26		36:00	1.66	28.3	40:00	1.615	
8:00	1.22		37:00	1.63		41:00	1.50	
8:30	1.215		38:00	1.58		41:10	1.42	
9:00	1.20		38:30	1.52		41:20	1.26	
9:30	1.18		39:00	1.30		41:30	1.20	
0:00	1.16		39:10	1.23		41:40	1.13	
3:00	1.137		39:20	1.15		41:47	1.00	28.8
4:00	1.11	30.0	39:30	1.00	28.4			
5:00	1.077							
6:00	1.057							
7:00	1.02							
7 :29	1.00							
inal temperature		30.1			28.4			28.8
Watt hours	5.88		11.57			12.16		

APPENDIX 5. Table 2.21. (sheet 5)

Battery Number 21 (cont'd)
1/28/53

RECOVERY DISCHARGE

	Cell 1	Cell 2	Cell 3
OCV (m)	1.885	1.86	1.865
Cell temperature	27.3°C	27.8°C	23.0
Room temperature	26.5°C	26.5°C	26.5

Discharged at 5 amps to one volt

Min.	Volt	Temp	Min	Volt	Temp	Min	Volt	Temp
0:00	1.885	27.3	0:00	1.855	27.6	0.00	1.865	27.8
:05	1.720		:05	1.805		:05	1.810	
:30	1.680		:30	1.785		:30	1.785	
1:00	1.660		1:00	1.770		2:00	1.745	
2:00	1.640					3:00	1.725	
3:00	1.625		3:00	1.740		5:00	1.700	
4:00	1.605		6:00	1.720		6:00	1.675	
5:00	1.590		9:00	1.665	27.6	7:00	1.645	
6:00	1.565		11:00	1.245		8:00	1.595	
7:00	1.555		11:29.1	1.000		8:30	1.340	
9:00	1.505				27.7	8:45	1.285	
10:00	1.485					9:00	1.250	
11:00	1.465					9:15	1.190	
12:00	1.445					9:27.8	1.000	27.8
13:00	1.420							
14:00	1.390							
15:00	1.360							
17:00	1.315							
18:00	1.290							
19:00	1.265							
20:00	1.245							
21:00	1.215							
22:00	1.195							
23:00	1.155							
24:00	1.120							
25:00	1.075							
25:30	1.050							
25:57.9	1.000							
		27.5°C						

APPENDIX 5.

Table 2.22. Charge and discharge data (distilled water)

Battery Number 22
Date: 1/27/53

	Cell 1	Cell 2	Cell 3
OCV(m)	1.185	0.882	0.252
Date 1/27/53	Dumped and drained of electrolyte filled with Distilled water at 25.6°		
CC water added	634	644	638
OCV(m)	1.072	0.885	0.69

PRE-TEST CHARGE

Date 1/28/53			
Cell temperature	27.0°C	27.0°C	26.8°C
Room temperature	26.8°C	26.8°C	26.8°C
OCV(m)	1.02	.89	.77
Specific gravity	not floating	not floating	not floating

Charged for 1 hour at 5 amps.

hr.	min.	sec.	Volts	Temp.	Volts	Temp.	Volts	Temp.
0	0	30	1.98		3.5		4.0	
0	1	0	2.0		3.55		4.0	
0	2	0	2.0		4.3		4.4	
0	3	0	2.0		5.0		4.6	
0	4	0	2.0		5.4		4.7	
0	5	0	2.0	27.0	5.4	28.0	4.7	26.8
0	7	0	2.01		5.5		4.50	
0	9	0	2.01	27.0	5.7	29.0	4.2	27.0
0	12	0	2.18		5.6		3.75	
0	15	0	2.18	27.1	5.14	30.0	3.22	27.6
0	18	0	2.18		4.3		2.86	
0	20	0	2.18		3.75		2.78	
0	25	0	2.18	27.4	3.12	30.3	2.60	28.0
0	30	0	2.18	27.7	2.86	30.4	2.51	28.4
0	35	0	2.04	27.7	2.72	30.5	2.46	28.6
0	40	0	2.20		2.58		2.39	
0	50	0	2.20	28.0	2.43	30.6	2.33	28.8
0	58	0	2.21	28.0	2.72	30.6	2.32	29.0

APPENDIX 5. Table 2.22. (sheet 2)

Battery Number 22 (Cont'd)
Date: 1/28/53

PRE-TEST DISCHARGE

	Cell 1	Cell 2	Cell 3
Specific gravity	not floating	not floating	not floating
OCV(m)	1.92	1.78	1.78
Temperature of room	26.2°C	26.2°C	26.2°C
Temperature of cell	28.1	30.6	28.2

Discharged at 5 amps to one volt

Min.	Volts	Min.	Volts	Min.	Volts
OCV	1.90	OCV	1.30	OCV	1.41
:05	1.54	:05	gone	:05	.4
:30	1.56				at 3 amps
1:00	1.56				
2:00	1.57				
3	1.58				
4	1.582				
5	1.59				
6	1.61				
7	1.80				
8	1.79				
10	1.78				
15	1.77				
20	1.76				
30	1.72				
37:24	1.00				
Temperature	28.6°C		30.0		
Watt hours	5.14		0.00		0.01

APPENDIX 5. Table 2.22 (sheet 3)

Battery Number 22 (Cont'd)
Date: 1/28/53

TEST CHARGE

	Cell 1	Cell 2	Cell 3
Specific gravity	not floating	not floating	not floating
Room temperature	27.0°C	27.0°C	27.0°C
OCV(m)	1.82	1.24	1.29
Cell temperature	28.5°C	29.6°C	29.1°C

Charged at 10 amps for two hours

hr.	min.	sec.	Volts	Temp.	Volts	Temp.	Volts	Temp.
		30	1.86		2.68		2.53	
0	2	0	1.90		2.60		2.50	
0	3	0	1.92	28.5	2.66	29.6	2.48	29.1
			$MgSO_4$+Na_2SO_4 added					
0	5	0	1.94	28.5	2.47	29.8	2.44	29.3
							Treated with AD-X2	
0	8	0	1.96	28.8	2.40	29.8	2.34	29.6
0	12	0	1.97		2.32		2.00	
0	15	0	1.98	28.6	2.28	29.8	1.96	30.2
0	30	0	2.02	28.8	2.22	30.0	1.96	30.6
0	45	0	2.05	28.9	2.20	30.0	2.00	30.6
1	0	0	2.06	28.9	2.18	30.3	2.04	31.0
1	40	0	2.08	29.2	2.16	31.0	2.07	31.5
2	0	0	2.10	29.6	2.16	31.0	2.08	31.8

APPENDIX 5. Table 2.22. (sheet 4)

Battery Number 22 (Cont'd)
Date: 1/28/53

TEST DISCHARGE

	Cell 1	Cell 2	Cell 3
OCV(m)	1.95	1.86	1.82
Specific gravity	floating	not floating	not floating
Temperature of cell	29.5°C	31.0°C	32.0°C
Room temperature	26		

Discharged at 10 amps to one volt

Cell 1		Cell 2		Cell 3	
Temp.					
Min.	Volts	Min.	Volts	Min.	Volts
:05	1.74	:05	1.38	:05	1.42
:30	1.72	:30	1.33	:30	1.36
1:00	1.70	:45	1.33	:45	1.32
2:00	1.70	1:00	1.32	1:00	1.30
3	1.70	2	1.26	2	1.19
5	1.69	3	1.18	3:53	1.00
10	1.68	4	1.08		
15	1.66	4:31	1.00		
20	1.65				
30	1.61				
40	1.51				
52	1.40				
52:46	1.00				
Temperature	29.7°C		31.7°C		31.0°C
Watt hours	13.99		0.92		0.78

APPENDIX 5. Table 2.22. (sheet 5)

Battery Number 22 (Cont'd)
Date: 1/29/53

RECOVERY DISCHARGE

	Cell 1	Cell 2	Cell 3
OCV(m)	1.84	1.19	1.23
Specific gravity	floating	not floating	not floating
Temperature of cell	26.9°C	26.9°C	26.5°C
Room temperature	26.2	26.2	26.2

Discharged at 5 amps to one volt

Cell 1			Cell 2			Cell 3		
Min.	Volts	Temp.	Min.	Volts	Temp.	Min.	Volts	Temp.
:05	1.49		:05	.40		:05	.98	
1:30	1.48		:20	.28		:30	.92	
2	1.46							
3	1.44							
5	1.43							
10	1.10							
10:07	1.00							
Temperature		27.2°C			27.0°C			26.8°C

APPENDIX 5. Table 2.23. Charge and discharge data (distilled water)

Battery 23
Date: 1/27/53

	Cell 1	Cell 2	Cell 3
OCV (m)	0.10	0.12	1.245
Date 1/27/53	Dumped and drained of electrolyte		
CC water added	398	498	406
OCV (M)	0.095	0.105	1.245

PRE-TEST CHARGE

Date 1/28/53			
Cell temperature	26°	26.3°	26°
Room temperature	26°	26°	26°
OCV(m)	0.10	0.08	1.14
Specific gravity	Not floating	Not floating	Not floating

Charged for 1 hour at 5 amps

hrs.	min.	sec.	Volts	Temp.	Volts	Temp.	Volts	Temp.
0	0	0	0.10	26	0.08	26.3	1.14	26
0	6	0	2.03	26	2.04	26.3	2.02	26
0	24	0	2.06	26.15	2.06	26.45	2.04	26.15
0	30	0	2.08	26.3	2.07	26.5	2.04	26.4
0	42	0	2.10		2.07		2.05	
0	58	0	2.10	27.3	2.065	26.7	2.05	26.3
1	0	0		27.3		26.7		26.3

Room temperature 26°

APPENDIX 5, Table 2.23. (sheet 2)

Battery 23 (Cont'd)
Date: 1/28/53

Pre-Test Discharge

	Cell 1	Cell 2	Cell 3
Specific gravity	Not floating	Not floating	Not floating
OCV (m)	1.940	1.92	1.92
Temperature of cell	26.9°	26.8°	26.4°
Room temperature	26.8	26.8	26.8

Discharged at 5 amps to 1 volt

Cell 1			Cell 2			Cell 3		
Min. Sec.	Volts	Temp	Min. Sec.	Volts	Temp	Min. Sec.	Volts	Temp
0	1.940	26.9	0	1.90	26.7	0	1.90	26.2
0 5	1.86		0 5	1.85		0 5	1.85	
6	1.82		6	1.80		15	1.79	
25	1.68		19	1.74		23	1.76	
26	1.28		24:44	1.00	26.8	28	1.71	
26:07	1.00	26.9				31	1.58	
						31:26	1.00	26.2
Room temperature		26.8			26			25.8
Watt hours	3.83		3.48			4.64		

APPENDIX 5. Table 2.23. (sheet 3)

Battery 23 (Cont'd)
Date: 1/28/53

TEST CHARGE

	Cell 1	Cell 2	Cell 3
Cell temperature	26.4°C	26.0°C	26.0°C
Room temperature	25.7	25.7	25.7
OCV (m)	1.860	1.840	1.830
Specific gravity	Not floating	Not floating	Not floating

Charged at 10 amps to one volt

hr.	min.	sec.	Volts	Temp.	Volts	Temp.	Volts	Temp.
0	0	0	1.860	26.4°	1.84	26.5°	1.83	26.1
0	1	0	1.96		1.92		1.92	
0	5	0			(AD-X2)	26.4		
0	8	0					$MgSO_4+Na_2SO_4$ added	
0	11	0	2.03	26.4	1.99	27.2	2.00	25.9
0	30	0	2.11	26.6	2.06	27.1	2.04	26.0
1	0	0	2.11	26.3	2.06	27.1	2.06	26.3
1	30	0	2.12	27.6	2.07	26.9	2.06	26.5
1	58	0	2.12	28.0	2.07	27.3	2.08	26.7
2	0	0		28.0		27.3		26.7

Room temperature 27°

APPENDIX 5. Table 2.23 (sheet 4)

Battery 23 (Cont'd)
Date: 1/28/53

TEST DISCHARGE

	Cell 1	Cell	Cell 3
OCV (m)	1.960	1.95	1.945
Specific gravity	Not floating	Floating	Floating
Temperature of cell	28.0°C	27.0°C	26.7°C
Temperature of room	27.5	27.5	27.5

Discharged at 10 amps to one volt

	Cell 1		Cell 2			Cell 3		
Temp	28.0°C		26.8°C			26.3°C		
Min.	Volts	Temp	Min.	Volts	Temp	Min.	Volts	Temp
0	1.960	28°	0	1.93	26.8	0	1.92	26.3
5/60	1.84		5/60	1.84		5/60	1.84	
5	1.80		9	1.80		9	1.80	
15	1.77		20	1.76		18	1.77	
24	1.73		27	1.70		28	1.72	
28	1.71		30	1.61		32	1.69	
32	1.65		31	1.48		35	1.62	
34:30	1.28		34:43	1.00	27.1	36:24	1.24	
34:52	1.00	27.9				36.49	1.00	26.7
Temperature	25.5°		26.5°			26.5°		
Watt hours	10.07		9.25			10.58		

APPENDIX 5. Table 2.23, (sheet 5)

Battery 23 (Cont'd)

Date: 1/2~~3~~/53

RECOVERY DISCHARGE

	Cell 1	Cell 2	Cell 3
OCV (m)	1.87	1.86	1.85
Specific gravity	Floating	Not floating	Floating
Temperature of cell	25.2°	25.5°	25.1°
Room temperature	25.9°	25.9°	25.9°

Discharged at 5 amps to 1 volt

	Cell 1		Cell 2		Cell 3		
Temp.	25.2		25.5		25.2		
Min.	Volts	Temp	Min.	Volts	Temp	Min.	Volts	Temp
0	1.87	25.2	0	1.86	25.5	0	1.85	25.2
10/60	1.80	25.2	5/60	1.80		5/60	1.80	
5	1.76		9	1.74		6	1.74	
13	1.65		15	1.68		9	1.71	
14	1.44		19	1.54		15	1.60	
14:30	1.00	25.2	19:30	1.36		17	1.00	25.4
			20:30	1.00	25.6			

Room temperature 25.9

APPENDIX 5.

Table 2.24. Charge and discharge data (distilled water)

Battery Number 24
1/27/53

	Cell 1	Cell 2	Cell 3
OCV(m)	0.23	0.29	1.212
Date 1/27/53	Dumped and drained of electrolyte		
CC of water added	376	405	312
OCV(m)	0.21	0.27	1.238

PRE-TEST CHARGE

Date 1/28/53			
OCV(m)	0.180	0.240	1.2 falling
Specific gravity	not floating	not floating	not floating
Room temperature	26.2		

Charged at 5 amps for 1 hour

Min.	Volt	Temp.	Volt	Temp.	Volt	Temp.
0:00	0.175	26.8	0.225	27.0	1.060	27.0
:05	2.07		2.24		2.13	
1:00	2.04		2.17		2.095	
3:00	2.07		2.16		2.10	
6:00	2.085	27.0	2.17	27.2	2.105	27.2
15:00	2.145	27.2	2.18	27.5	2.12	27.4
20:00	2.145	27.4	2.17	27.8	2.12	27.8
32:00	2.155	27.8	2.17	27.9	2.12	27.9
40:00	2.157	27.8	2.16	28.0	2.12	28.0
50:00	2.16	28.0	2.17	28.0	2.12	28.0
58:00	2.16		2.16		2.12	
60:00	current off					
	Final Temp. 28.0		Final Temp. 28.1		Final Temp. 28.1	

APPENDIX 5. Table 2.24 (sheet 2)

Battery Number 24 (Cont'd)
1/28/53

PRE-TEST DISCHARGE

	Cell 1	Cell 2	Cell 3
OCV(m)	1.985	1.960	1.960
Specific gravity	floating	floating	not floating
Temperature of cell	28.2°C	28.2°C	28.2°C

Discharged at 5 amps to one volt

Cell 1			Cell 2			Cell 3		
Min.	Volts	Temp.	Min.	Volts	Temp.	Min.	Volts	Temp.
0:00	1.975	28.0	0:00	1.945	28.1	0:00	1.925	28.0
:05	1.9	28.0	:05	1.460		:05	1.855	
:30	1.88		:30	1.420		:30	1.84	
1:00	1.88		:45	1.405		1:00	1.835	
3:00	1.875		1:00	1.500		5:00	1.825	
7:00	1.860		1:30	1.500		9:00	1.805	28.1
10:00	1.845		2:00	1.495		14:00	1.780	
14:00	1.835		3:00	1.485		18:00	1.760	
18:00	1.820		5:00	1.760		22:00	1.735	
21:00	1.795		6:00	1.740		25:00	1.705	
23:00	1.775		8:00	1.760		27:00	1.680	
25:00	1.730		9:00	1.750		29:00	1.635	
26:00	1.700		11:00	1.740	28.1	30:00	1.600	
26:30	1.675		13:00	1.720		31:00	1.560	
27:00	1.640		15:00	1.685		31:30	1.520	
27:30	1.580		16:00	1.670		32:00	1.430	
28:00	1.440		18:00	1.645		32:30	1.140	
28:15	1.360		19:00	1.620		32:34.0	1.000	28.2
28:30	1.270		21:00	1.575				
28:43.6	1.000	28.3	21:30	1.550				
			22:00	1.535				
			22:30	1.510				
			24:00	1.440				
			25:00	1.380				
			25:30	1.355				
			26:00	1.320				
			26:30	1.28				
			27:00	1.25				
			27:30	1.20				
			28:00	1.14				
			28:15	1.11				
			28:30	1.07				
			28:43.5	1.00	28.5			

Watt hours 4.31 3.65 4.73

APPENDIX 5. Table 2.24 (sheet 3)

Battery Number 24 (Cont'd)

1/28/53

TEST CHARGE

	Cell 1	Cell 2	Cell 3
OCV(m)	1.90	1.875	1.845
Temperature of cell	28.0	28.2	28.2
Specific gravity	floating	floating	not floating

Charged at 5 amps for 2 hours

	Cell 1		Cell 2		Cell 3	
Min.	Volt	Temp.	Volt	Temp.	Volt	Temp.
0:00	1.900	27.3	1.875	28.0	1.855	28.2
:05	1.960		1.995		1.945	
:30	1.980		2.025		1.965	
1:00	1.995	27.3	2.045	28.0	1.985	28.2
3:00	2.035	27.3	2.065	28.0	2.015	28.3
3 to 5	AD-X2 added					
6	2.045	28.3	2.075	28.0	2.025	28.3
7 to 8			$MgSO_4$+$NaSO_4$ added			
9	2.060	29.1	2.090	27.4	2.035	28.3
15	2.065	30.3	2.120	27.7	2.050	28.3
40	2.160	28.6	2.175	28.0	2.110	28.8
60	2.160	28.5	2.175	28.2	2.120	28.9
80	2.162	28.9	2.18	28.8	2.12	29.1
100	2.172	29.1	2.18	29.0	2.12	29.5
110	2.17	29.3	2.18	29.0	2.12	29.7
118	2.17	29.5	2.18	29.1	2.12	29.8
120	current off					
	Final Temp. 29.8		Final Temp. 29.2		Final Temp. 29.8	

APPENDIX 5. Table 2.24 (sheet 4)

Battery Number 24 (Cont'd)
1/28/53

TEST DISCHARGE

	Cell 1	Cell 2	Cell 3
OCV(m)	2.00	1.985	1.965
Specific gravity	1.065	1.045	not floating
Temperature of cell	29.0	29.1	29.0

Discharged at 10 amps to one volt

Cell 1			Cell 2			Cell 3		
Min.	Volt	Temp.	Min.	Volt	Temp.	Min.	Volt	Temp.
0:00	1.980	29.1°C	0:00	1.960	29.0	0:00	1.920	29.5°C
:05	1.900		:05	1.81		:05	1.820	
:30	1.880		:30	1.790		:30	1.805	
1:00	1.870		1:30	1.775		1:30	1.805	
4:00	1.860	29.2°C	3:00	1.765		5:00	1.785	
7:00	1.850		6:00	1.74		9:00	1.755	
10:00	1.840		9:00	1.695		12:00	1.735	
13:00	1.825		12:00	1.635		15:00	1.695	
16:00	1.810	29.1	15:00	1.580		18:00	1.645	
21:00	1.780		17:00	1.530		21:00	1.615	
23:00	1.760		20:00	1.450		24:00	1.540	
25:00	1.740		21:00	1.400	29.5	27:30	1.405	
27:00	1.705		22:00	1.365		28:00	1.375	
29:00	1.68		22:30	1.340		29:00	1.260	
30:00	1.62		23:00	1.300		29:30	1.115	
31:00	1.565		23:30	1.280		29:40.5	1.000	30.2
32:00	1.475		24:00	1.260				
32:30	1.415		24:30	1.235				
33:00	1.33		25:00	1.200				
33:30	1.27		25:30	1.160				
34:00	1.14		26:00	1.140				
34:22.0	1.00	29.4	26:30	1.110				
			27:00	1.075				
			27:30	1.035				
			27:45	1.020				
			28:01.0	1.000	30.0			
Watt hours	10.04			7.19			8.18	

APPENDIX 5. Table 2.24 (sheet 5)

Battery Number 24 (Cont'd)
1/29/53

RECOVERY DISCHARGE

	Cell 1	Cell 2	Cell 3
OCV(m)	1.90	1.885	1.805
Specific gravity	1.055	1.040	not floating
Temperature of cell	26.4	27.0	27.2
Room temperature	25.9		

Discharged at 5 amps to one volt

Cell 1			Cell 2			Cell 3		
Min.	Volts	Temp.	Min.	Volts	Temp.	Min.	Volts	Temp.
0:00	1.905	26.4	0:00	1.885	27.0	0:00	1.80	27.1
:05	1.82		:05	1.86		:05	1.25	
:30	1.755		:30	1.84		:13	1.00	
1:00	1.73		1:00	1.83				
2:00	1.66		2:00	1.81				
3:00	1.40		3:00	1.79				
3:15	1.30		4:00	1.67				
3:20	1.26		5:00	1.65				
3:30	1.20		7:00	1.585				
3:40	1.10	26.6	9:00	1.525				
3:50	1.00		10:00	1.49	27.0			
			12:00	1.38				
			13:00	1.34				
			14:00	1.29				
			15:00	1.25				
			15:30	1.24				
			16:00	1.22				
			16:30	1.20				
			17:00	1.17				
			17:30	1.155				
			18:00	1.13				
			18:30	1.10				
			19:00	1.08				
			19:30	1.05				
			20:00	1.02				
			20:02	1.00	27.5			

APPENDIX 5
Table 2.25 - Charge and Discharge Data (distilled water).

Battery 25

	Cell 1	Cell 2	Cell 3
OCV(m)	1.22	1.27	1.215
Date 1/28/53	Distilled water at 25.8°		
CC water added	850	865	875
OCV (m)	1.21	1.27	1.19
	PRE-TEST CHARGE		
Date 1/29/53			
Cell temperature	26.5	26.5	26.3
Room temperature	27.0	27.0	27.0
OCV(m)	1.10 falling	1.16	1.03 falling
Specific gravity	Not floating	Not floating	Not floating

Charged for 1 hour at 5 amps

hrs.	min.	sec.	Volts	Temp.	Volts	Temp.	Volts	Temp.
0	0	30	2.05		2.01		2.22	
0	1	00	1.98		1.98		2.00	
0	3	00	1.98		1.98		1.99	
0	5	00	2.01	26.5°C	2.01	26.6°C	2.01	26.3°C
0	12	00	2.06	26.6	2.06	26.7	2.04	26.5
0	23	00	2.05	26.8	2.05	26.8	2.03	26.6
0	40	00	2.045	26.8	2.055	26.9	2.02	26.8
0	50	00	2.05	26.8	2.05	27.0	2.02	26.8
0	58	00	2.04	27.0	2.05	27.0	2.03	27.0

APPENDIX 5
Table 2.25 (Sheet 2)

Battery Number 25 (Continued)
1/29/53

PRE-TEST DISCHARGE

	Cell 1	Cell 2	Cell 3
Specific gravity	Not floating	Not floating	Not floating
OCV (m)	1.92	1.93	1.90
Temperature of cell	27.1	27.1	27.1

Discharged at 5 amps to 1 volt

Cell 1		Cell 2			Cell 3		
Min: Sec	Volts	Min: Sec	Volts		Min: Sec	Volts	
00:5	1.82	00:5	1.80	27.5°	00:5	1.81	27.5°
00:30	1.81	00:30	1.79		00:30	1.80	
2:00	1.79	1:00	1.78		1:00	1.78	
5:00	1.77	5:00	1.755		5:00	1.76	
8:00	1.76	10:00	1.74		16:00	1.70	
10:00	1.75	15:00	1.73		20:00	1.68	
15:00	1.74	20:00	1.72		26:08	1.00	
20:00	1.72	25:00	1.69				
25:00	1.70	30:00	1.67				
30:00	1.68	33:00	1.64				
34:43	1.00	35:00	1.53				
		35:48	1.00				
Temperature	27.6°C		27.8°C			27.9°C	
Watt hours	4.87		5.08			3.58	

APPENDIX 5
Table 2.25 (Sheet 3)

Battery Number 25 (Cont'd)
1/29/53

TEST CHARGE

	Cell 1	Cell 2	Cell 3
Cell temperature	28.0	28.0	28.0
OCV(m)	1.84	1.84	1.80
Specific gravity	Not floating	Not floating	Not floating

Charged at 5 amps for two hours

hr.	min.	sec.	Volts	Temp	Volts	Temp	Volts	Temp
0	0	0	1.84	28.0	1.84	28.0	1.80	28.0
0	0	30	1.88		1.88		1.86	
0	3	0	1.93	28.2	1.93	28.0	1.91	28.0
			$MgSO_4$ + Na_2SO_4					
0	5	0	1.96	27.8	1.96	28.0	1.94	28.0
0	6	0	1.97	27.8	1.97	28.0	1.95	28.0
							added AD-X2	
0	9	0	1.98	27.9	1.99	28.0	1.96	28.0
0	15	0	2.00	27.9	2.005	28.0	1.975	28.8
0	30	0	2.025	27.8	2.025	28.0	2.025	28.7
0	45	0	2.045	28.1	2.05	28.3	2.04	28.5
1	15	0	2.045	28.3	2.04	28.5	2.04	28.6
1	34	0	2.045	28.5	2.04	28.6	2.05	28.8
1	50	0	2.045	28.7	2.04	28.8	2.05	29.0
1	59	0	2.05	28.8	2.04	29.0	2.06	29.1
2	00	0	Off Charge					

APPENDIX 5
Table 2.25 (Sheet 4)
Battery Number 25 (Cont'd)
1/29/53

TEST DISCHARGE

	Cell 1	Cell 2	Cell 3
OCV(m)	1.93	1.94	1.91
Specific gravity	Floating	Not floating	Floating
Temperature of cell	28.9	29.0	29.1

Discharged at 10 amps to one volt

Cell 1		Cell 2			Cell 3		
Temp. Min:Sec	Volts	Min:Sec	Volts		Min:Sec	Volts	
00:05	1.48	00	1.915	29.1°	00	1.885	29.1°
1:00	1.46	00:05	1.76		00:05	1.79	
3:00	1.45	00:30	1.74		00:30	1.775	
5:00	1.45	1.00	1.72		1:00	1.76	
8:00	1.45	3:00	1.71		3:00	1.757	
		5:00	1.705		5:00	1.745	
9:00	1.46	10:00	1.69	29.2°	10:00	1.735	29.2
10:00	1.44	15:00	1.675		15:00	1.717	
		20:00	1.665		20:00	1.695	29.2
11:00	1.44	25:00	1.62		25:00	1.66	
13:00	1.46	30:00	1.54		27:00	1.65	
15:00	1.45	31:00	1.43	29.4°	28:00	1.64	
17:00	1.44	31:15	1.18		30:00	1.62	
		31:30	1.04		32:00	1.59	
18:00	1.46	31:33	1.00		34:00	1.52	
19:00	1.44				34:30	1.42	
21:00	1.45				35:00	1.14	
23:00	1.43				35:10	1.00	
25:00	1.41						
26:00	1.40						
27:00	1.40						
28:00	1.41						
29:00	1.39						
33:00	1.36						
34:00	1.02						
34:04	1.00						
Temperature	30.0		29.4			29.4	
Watt hours	8.10		8.69			9.87	

APPENDIX 5
Table 2.25 (Sheet 5)

Battery Number 25 (Cont'd)
1/30/53

RECOVERY DISCHARGE

	Cell 1	Cell 2	Cell 3
OCV (m)	1.85	1.86	1.83
Specific gravity	Floating	Not floating	Floating
Temperature of cell	27.2	27.0	26.5
Room temperature	27.5	27.5	27.5

Discharged at 5 amps to one volt

Cell 1		Cell 2		Cell 3		
Temp.				26.3		
Min:Sec	Volts	Min:Sec	Volts	Min:Sec	Volts	
00:05	1.47	00:05	1.76			
00:30	1.46	00:30	1.73	00:05	1.75	26.8°
1:00	1.42	1:00	1.71	1:00	1.72	
2:00	1.40	2:00	1.70	2:00	1.70	
3:00	1.40	3:00	1.697	3:00	1.70	
5:00	1.41	5:00	1.69	5:00	1.69	
10:00	1.37	10:00	1.66	10:00	1.663	
15:00	1.30	15:00	1.56	12:00	1.647	
16:20	1.00	15:30	1.54	15:00	1.61	
		16:00	1.46	17:00	1.57	
		16:30	1.23	18:00	1.51	
		16:45	1.20	18:30	1.36	
		17:00	1.16	19:00	1.18	
		17:28.5	1.00	19:26	1.00	
Temperature	27.5		27.5		27.0	

APPENDIX 5
Table 2.26 -

Charge and Discharge Data
(distilled water).

Battery Number 26

	Cell 1	Cell 2	Cell 3
OCV (m)	0.235	0.082	1.19

Dumped and drained of electrolyte

CC water added	740	736	720
OCV (m)	0.142	0.08	1.21

PRE-TEST CHARGE

Date 1/29/53			
Cell temperature	25.9°	26.1°	26.1°
Room temperature	27.0°	27.0°	27.0°
OCV (m)	0.04	0.07	1.01
Specific gravity	Not floating	Not floating	Not floating

Charged for 1 hr at 5 amp

hr.	min.	sec.	Volt	Temp.	Volt	Temp.	Volt	Temp.
0	0	00	0.04	25.9				
0	7	00	2.52	25.9	1.96	26.1	2.03	26.1
0	26	00	2.11	25.8	2.00	26.3	2.03	25.9
0	39	00	2.07		2.00		2.02	
0	45	00	2.06		2.00		2.01	
0	58	00	2.06	26.2	2.02	26.5	2.01	26.1
1	00	00		26.2		26.5		26.1
Room temperature				27.9		27.9		27.9

APPENDIX 5
Table 2.26 (Sheet 2)

Battery Number 26 (cont'd)
1/29/53

PRE TEST DISCHARGE

	Cell 1	Cell 2	Cell 3
Cell temperature	26.2	26.4	26.1
OCV (m)	1.88	1.92	1.89
Specific gravity	Not floating	Not floating	Not floating

Discharged at 5 amps to one volt

Cell 1				Cell 2				Cell 3			
Min.	Sec.	Volts	Temp.	Min.	Sec.	Volts	Temp.	Min.	Sec.	Volts	Temp
00	0	1.88	26.2	0	0	1.90	26.2	0	0	1.84	25.9
00	5	1.75		0	5	1.86		0	5	1.80	
2	0	1.70		7	0	1.79		8	0	1.72	
6	0	1.60		15	0	1.76		14	0	1.64	
8	0	1.40		22	0	1.30		15	26	1.00	26.0
8	14	1.00	26.3	22	3	1.00	26.3				
Room temp.			27°				27°				27°
Watt hours		1.11				3.14				2.17	

APPENDIX 5
Table 2.26 (Sheet 3)

Battery Number 26 (cont'd)

1/29/53

TEST CHARGE

	Cell 1	Cell 2	Cell 3
OCV (m)	1.80	1.83	1.80
Specific gravity	Not floating	Not floating	Not floating
Temperature of cell	26.6°	26.5°	26.1°

Charged at 5 amps for 2 hours

		Cell 1		Cell 2		Cell 3	
hr.	min.	Volt	Temp.	Volt	Temp.	Volt	Temp.
0	0	1.80	26.5°	1.83	26.3°	1.80	26.1°
0	1	1.93		1.87		1.88	
0	4					$MgSO_4+Na_2SO_4$ added	
0	8			AD-X2	added		
0	10	2.03	26.5°	1.97	26.7°	1.96	26°
0	49	2.03	26.7°	2.04	27.0°	2.02	26°
1	22	2.03	27.0°	2.06	26.8°	2.02^5	26.8°
1	59	2.03	27.4°	2.06	27.0°	2.05	26.4°
2	00		27.4°		27.0°		26.4°
Room temperature			27.9°		27.9°		27.9°

APPENDIX 5
Table 2.26 (Sheet 4)

Battery 26 (cont'd)
1/29/53

TEST DISCHARGE

	CELL 1	CELL 2	CELL 3
OCV (m)	1.92	1.93	1.92
Specific gravity	Not floating	floating	floating

Discharged at 30 amps to 1 volt

Cell 1				Cell 2				Cell 3			
Min.	Sec.	Volts	Temp.	Min.	Sec.	Volts	Temp.	Min.	Sec.	Volts	Temp
0	0	1.92	27.6°	0	0	1.92	27°	0	0	1.90	26.5
0	5	1.84		0	5	1.85		0	5	1.80	
5	0	1.76		8	0	1.79		6	0	1.74	
15	0	1.60		15	0	1.77		12	0	1.72	
16	0	1.10		23	0	1.74		17	0	1.70	
16	6	1.00	27.6°	30	0	1.69		22	0	1.67	
				32	0	1.66		26	0	1.62	
				34	0	1.52		27	0	1.60	
				34	36	1.00	27.2°	29	40	1.00	26.8
Room temp.			27.9°				27.9°				28°
Watt hours			4.54				10.07				8.28

APPENDIX 5
Table 2.26 (Sheet 5)

Battery 26 (cont'd)

1/30/53 RECOVERY DISCHARGE

	Cell 1	Cell 2	Cell 3
OCV (m)	1.82	1.83	1.82
Specific gravity	Not floating	Not floating	
Cell temperature	25.3°	25.5°	25.3°

Discharged at 5 amps to 1 volt

Cell 1				Cell 2				Cell 3			
Min.	Sec.	Volts	Temp.	Min.	Sec.	Volts	Temp.	Min.	Sec.	Volts	Temp.
0	0	1.82	25.3°	0	0	1.84	25.5	0	0	1.82	25.4°
0	5	1.78		0	5	1.80		0	5	1.76	
6	0	1.70		6	0	1.73		5	0	1.70	
11	0	1.56		11	0	1.67		12	0	1.66	
12	58	1.00	25.3°	14	0	1.15		17	0	1.60	
				14	9	1.00	25.5	20	0	1.46	
								21	0	1.14	
								21	17	1.00	25.5°
Room temp.		26°				26°					26°

APPENDIX 5.

Table 2.27. Charge and discharge data (distilled water)

Battery 27
1/29/53

	Cell	Cell 2	Cell 3
OCV(m)	0.722	1.362	0.72
Date: 1/29/53			
CC water added	250	212	217
OCV(m)	0.741	1.28	0.682

PRE-TEST CHARGE

Date: 1/29/53			
Cell temperature	26.1°C	26.3°C	26.9°
Room temperature	27.0	27.0	27.0
OCV(m)	.75	1.21	.68
Specific gravity	not floating	not floating	not floating

Charged at 5 amps for 1 hour

Min.	Sec.	Volts	Temp.	Volts	Temp.	Volts	Temp.
0	00	0.75	26.1	1.23	26.3	0.66	26.9
3	00	3.3		2.1		3.5	
5	00	2.9		2.05		3.4	
8	00	2.6		2.05		3.4	
18	00	2.7		2.05		2.75	
25	00	2.6	27.1	2.05	27.0	2.70	28.5
30	00	2.5		2.05		2.60	
45	00	2.4	28.0	2.05	27.5	2.50	29.2
60	00	2.4	28.4	2.10	28.0	2.40	30.0
60	00	Off	28.4		28.0		30.0

APPENDIX 5.

Table 2.27 (sheet 2)

Battery 27 (continued)
1/29/53

PRE-TEST DISCHARGE

	Cell 1	Cell 2	Cell 3
Specific gravity	not floating	floating	not floating
OCV(m)	1.880	1.980	1.805
Temperature of cell	28.4	28.0	29.7

Discharged at 5 amps to 1 volt

Cell 1				Cell 2				Cell 3			
Min.	Sec.	Volts	Temp.	Min.	Sec.	Volts	Temp.	Min.	Sec.	Volts	Temp
0	00	1.86	28.3	0	00	1.95	28.0	0	00	1.52	
0	05	1.70		0	05	1.88		0	00	1.00	
0	30	1.69		0	30	1.87					
1	00	1.68		1	00	1.86					
2	00	1.655		3	00	1.85					
3	00	1.62		5	00	1.85					
5	00	1.52		7	00	1.84					
5	30	1.48		12	00	1.82	28.3				
7	00	1.22		16	00	1.80					
7	15	1.14		19	00	1.78					
7	30	1.07		25	00	1.75					
7	42	1.00	28.5	30	00	1.70	28.6				
				31	00	1.65					
				32	00	1.44					
				32	10	1.30					
				32	20	1.20					
				32	26	1.00	27.8				
Watt hours		0.97				4.81				0.00	

APPENDIX 5.

Table 2.27. (sheet 3)

Battery 27 (continued)

1/29/53

TEST CHARGE

	Cell 1	Cell 2	Cell 3
Cell temperature	28.3	28.7	29.5
OCV(m)	1.720	1.875	1.415
Specific gravity	not floating	floating	not floating

Charged at 5 amps for 2 hours

Min.	Sec.	Volts.	Temp.	Volts.	Temp.	Volts.	Temp.
0	00	1.715	28.0	1.880	28.5	1.380	29.5
0	10	2.03	28.0	1.96	28.5	2.36	29.5
1	00	2.075		2.00		2.38	
3	00	2.11	28.2	2.035	28.7	2.24	29.7
		Added AD-X2					
6	00	2.12	28.8	2.04	28.7	2.42	29.7
				$MgSO_4$ + Na_2SO_4			
8	00	2.12	29.2	2.05	28.5	2.415	29.8
10	00	2.115		2.055	29.0	2.41	30.0
20	00	2.12	30.0	2.07	29.0	2.36	30.1
40	00	2.11	30.0	2.09	29.0	2.27	30.8
83	00	2.105	30.0	2.095	29.2	2.235	31.2
92	00	2.10	30.5	2.10	29.8	2.20	31.8
107	00	2.105	31.0	2.12	30.1	2.18	32.4
118	00	2.10		2.12		2.16	
120	00	Off	31.2		30.6		32.8

APPENDIX 5

Table 2.27 (sheet 4)

Battery 27 (continued)
1/29/53

TEST DISCHARGE

	Cell 1	Cell 2	Cell 3
OCV(m)	1.895	1.975	1.855
Specific gravity	floating	1.065	not floating
Temperature of cell	31.2	30.7	32.8

Discharged at 10 amps to one volt

Cell 1			Cell 2			Cell 3		
Min:S	Volts	Temp.	Min:S	Volts	Temp.	Min:S	Volts	Temp.
:00	1.875	31.0	:00	1.96	31.0	:00	1.72	32.0
:05	1.73		:05	1.86		:05	1.24	
:30	1.71		:30	1.84⁵		:15	1.13	
1:00	1.70		2:00	1.84		:31	1.00	32.0
3:00	1.66		4:00	1.82⁵				
4:00	1.63⁵		7:00	1.80⁵	31.0			
5:00	1.61		10:00	1.78⁵				
6:00	1.58		15:00	1.75				
7:00	1.55	31.0	20:00	1.70⁵	31.0			
8:00	1.52		25:00	1.64⁵				
9:00	1.47		30:00	1.56	31.2			
10:00	1.43		32:00	1.50				
11:00	1.37⁵		34:00	1.42	31.4			
12:00	1.31	31.0	35:00	1.36				
13:00	1.22		35:30	1.32				
13:30	1.19		36:00	1.28				
14:00	1.15		36:30	1.24	31.8			
15:00	1.06		37:00	1.18				
15:36	1.00	31.0	37:30	1.06				
			37:49	1.00	32.0			

Watt hours	3.82	10.49	0.10

APPENDIX 5

Table 2.27 (sheet 5)

Battery 27 (continued)
1/30/53

RECOVERY DISCHARGE

	Cell 1	Cell 2	Cell 3
OCV(m)	1.180	1.895	.94
Specific gravity	floating	1.060	not floating
Room Temperature			
Cell Temperature	26.3	27.0	27.2

Discharged at 5 amps to one volt

Min;S	Volts	Temp.	Min: S	Volts	Temp.	Min:S	Volts	Temp.
0:00	1.185	26.3	:00	1.895	27.0	0:00	0.94	
:00	1.00		:05	1.825			No Discharge	
			:30	1.795				
			1:00	1.780				
			3:00	1.755				
			5:00	1.725				
			8:00	1.680				
			9:00	1.650				
			10:00	1.605				
			11:00	1.535				
			12:00	1.250				
			12:15	1.160				
			12:30	1.05				
			12:31.6	1.00	27.0			

APPENDIX 5.

Table 2.28. Charge and discharge data (distilled water)

Battery Number 28
1/29/53

	Cell 1	Cell 2	Cell 3
OCV(m)	0.238	0.868	1.045
Date 1/29/53	Dumped and drained of electrolyte Distilled Water at 26.0°		
CC water added	673	673	691
OCV(m)	0.228	0.875	1.06

PRE-TEST CHARGE

Date 1/30/53			
Cell temperature	25.8°C	26.0°C	25.8°C
Room temperature	27.0°C	27.0°C	27.0°C
OCV(m)	0.20	0.55	1.09
Specific gravity	no float	no float	no float

Charged for 1 hour at 5 amps

hr.	min.	sec.	Volts	Temp.	Volts	Temp.	Volts	Temp.
0	0	30	2.89		3.6		2.70	
0	2	30	2.65		3.24		2.73	
0	4	0	2.56	26.1	2.92	26.2	2.62	26.0
0	8	0	2.475		2.76		2.48	
0	16	0	2.40	26.8	2.61	27.0	2.51	26.5
0	20	0	2.37	26.8	2.54	27.0	2.54	26.7
0	30	0	2.31		2.44		2.51	
0	40	0	2.26	27.5	2.36	27.5	2.44	27.6
0	50	0	2.24	27.7	2.31	27.8	2.41	27.8
0	58	0	2.23	28.0	2.27	28.0	2.37	28.0
1	0	0	Off Charge					

APPENDIX 5.
Table 2.28. (sheet 2)

Battery Number 28 (Cont'd)
1/30/53

PPE TEST DISCHARGE

	Cell 1	Cell 2	Cell 3
Specific gravity	Not floating	Not floating	Not floating
OCV(m)	1.87	1.86	1.84
Temperature of cell	28.2°C	28.0°C	28.0°C
Room Temperature	27.6	27.6	27.6

Discharged at 5 amps to one volt

Min.	Volts	Min.	Volts		Min.	Volts	
:05	1.76	OCV	1.84	27.7°C	OCV	1.82	27.9°C
1:00	1.71	:05 sec	1.66		:05	1.66	
2	1.69	1:00	1.60		1:00	1.61	
3	1.67	2	1.52		2	1.58	
4	1.65	2:35	1.00		3	1.53	
6	1.60				4	1.47	
7	1.34				5	1.26	
7:16	1.00				5:31	1.00	
Temperature	28.0°C		27.7°C			28.0°C	
Watt hours	0.98		0.33			0.69	

APPENDIX 5.
Table 2.28 (sheet 3)

Battery Number 28 (Cont'd)
1/30/53

TEST CHARGE

	Cell 1	Cell 2	Cell 3
Cell temperature	28.0°C	28.0°C	28.0°C
Room temperature	27.8°C		
OCV(m)	1.81	1.82	1.76
Specific gravity	not floating	not floating	not floating

Charged at 5 amp for 2 hours

hr.	min.	sec.	Volts	Temp.	Volts	Temp.	Volts	Temp.
0	0	30	1.92		1.98		2.00	
0	1	0	1.96		2.04		2.07	
0	3	0	2.00	28.2	2.12	28.0	2.14	28.0
			$MgSO_4$	Na_2SO_4				
0	4	0	2.01	28.5	2.20	28.0	2.22	28.0
							AD-X2 added	
0	6	0	2.08	28.8	2.22	28.0	2.30	28.8
0	10	0	2.24	28.8	2.23	28.0	2.37	28.9
0	21	0	2.25	28.9	2.23	28.9	2.36	29.1
0	30	0	2.25	29.0	2.23	29.0	2.35	29.5
0	45	0	2.25	29.2	2.23	29.2	2.34	29.7
1	0	0	2.24	29.7	2.22	29.8	2.32	30.0
1	15	0	2.24	29.9	2.22	30.0	2.30	30.1
1	30	0	2.23	30.2	2.22	30.3	2.30	30.5
1	40	0	2.23	30.5	2.22	30.8	2.29	31.0
1	55	0	2.22	30.7	2.21	31.0	2.28	31.0
1	59	0	2.23	30.8	2.21	31.0	2.28	31.2

APPENDIX 5.
Table 2.28 (sheet 4)

Battery Number 28 (Cont'd)
1/30/53

TEST DISCHARGE

	Cell 1	Cell 2	Cell 3
OCV(m)	1.92	1.92	1.91
Specific gravity	floating	not floating	floating
Temperature of cell	30.8°C	30.8°C	31.0°C
Room Temperature	28.6		

Discharged at 10 amps to one volt

Cell 1		Cell 2		Cell 3	
Temp.	28.6		31.0		31.1
Min.	Volts	Min.	Volts	Min.	Volts
:05	1.78	:05	1.76	:05	1.75
:30	1.76	:30	1.74	:30	1.73
1:00	1.75	1:00	1.73	1:00	1.72
2:00	1.74	2:00	1.72	2:00	1.71
3	1.73	3	1.71	3	1.70
5	1.715	5	1.69	4	1.68
7	1.69	7	1.66	5	1.67
10	1.645	9	1.61	6	1.64
12	1.60	10	1.56	8	1.61
13	1.555	11:01	1.00	9	1.58
14	1.47			10	1.53
15	1.24			11	1.44
15:23	1.00			12	1.20
				12:20	1.00
Temperature	31.0°C		31.3°C		
Watt hours	4.21		3.02		3.30

APPENDIX 5
Table 2.28 (sheet 5)

Battery Number 28 (Cont'd)
1/31/53

RECOVERY DISCHARGE

	Cell 1	Cell 2	Cell 3
OCV(m)	1.820	1.805	1.80
Specific Gravity	1.040	Not floating	1.040
Temperature of cell	28.8°C	28.6°C	28.2°C
Room temperature	28.0		

Discharged at 5 amps to one volt

Cell 1			Cell 2			Cell 3		
Min.	Volts	Temp.	Min.	Volts	Temp.	Min.	Volts	Temp.
OCV	1.82	28.8	OCV	1.805	28.6	OCV	1.80	28.1
:05	1.70		:05	1.72		:05	1.69	
:30	1.66		:30	1.69		:30	1.66	
1:00	1.65		1:00	1.68		1:00	1.65	
2	1.62		2	1.66		2	1.63	
3	1.59		3	1.65		3	1.61	
4	1.54		4	1.62		4	1.58	
5	1.47		5	1.60		5	1.54	
5:30	1.40		6.00	1.57		6	1.50	
5:45	1.33							
6:00	1.26		7	1.46		7	1.43	
6:15	1.20							
6:30	1.10		7:30	1.36		8	1.30	
6:38	1.00		7:45	1.23		8:30	1.21	
			8:00	1.16		9:00	1.06	
			8:10	1.06		9:09	1.00	
			8:17	1.00				
Temperature	28.8°C			28.6°C			28.2°C	

APPENDIX 5
Table 2.29. Charge and discharge data (distilled water)

Battery Number 29

1/29/53	Cell 1	Cell 2	Cell 3
OCV (m)	0.245	0.44	0.51 falling
Date 1/29/53		Distilled water at 26.0°	
CC water added	380	376	388
OCV (m)	0.215	0.46	0.75
		PRE-TEST CHARGE	
Date 1/30/53			
Cell temperature			
Room temperature	26.3	26.3	26.3
OCV(m)	0.2	0.46	0.79
Specific gravity	Floating	Floating	Not Floating

Charged for 1 hour at 5 amps

hr.	min.	sec.	Volts	Temp.	Volts	Temp.	Volts	Temp.
0	0	0	0.2	25.9°	0.46	26.3°	0.79	26.2°
0	3	0	2.10		2.06		2.73	
0	16	0	2.04		2.02		2.35	
0	31	0	2.04		2.00		2.24	
0	50	0	2.04		2.02		2.18	
0	58	0	2.03	27.65	2.03	27.8	2.16	27.8
1	00	"						

Room temperature 27.5°C

Battery 29 (Cont'd)
1/30/53

PRE-TEST DISCHARGE

	Cell 1	Cell 2	Cell 3
Specific gravity	Floating	Not floating	Not floating
OCV(m)	1.94	1.91	1.82
Temperature of cell	27.6°C	27.8°C	27.9°C
Room temperature	27.5	27.5	27.5

Discharged at 5 amps to 1 volt

Cell 1			Cell 2			Cell 3		
Min.	Volts	Temp.	Min.	Volts	Temp.	Min.	Volts	Temp
0	1.94	27.6	0	1.90	27.9	0	1.79	27.9
0:05	1.90		0:05	1.84		0:05	1.64	
4:0	1.82		2:00	1.80		0:30	1.60	
4:41	1.00	27.6	5:00	1.76		1:00	1.57	
			6:53	1.00	27.9	2:30	1.45	
						3:00	1.37	
						3:30	1.26	
						4:00	1.14	
						4:30	1.00	28.15

Room temperature 27.5°C

Watt Hours 0.70 0.96 0.53

Battery Number 29 (Cont'd)

1/30/53

TEST CHARGE

	Cell 1	Cell 2	Cell 3
Cell temperature	27.6	28.	28.2
Room temperature	27.5	27.5	27.5
OCV(m)	1.90	1.86	1.70
Specific gravity	Floating	Not floating	Not floating

Charged at 5 amps for two hours

hr.	min.	sec.	Volts	Temp	Volts	Temp	Volts	Temp
0	0	0	1.90	27.6	1.86	28°	1.70	28.2
0	2	0	$MgSO_4$ + Na_2SO_4 added					
0	4	0					AD-X2 added	
0	6	0	2.03	26.7	2.0	28°	2.16	28.7
0	14	0	2.05	27.0	2.05	28.1	2.16	28.75
0	25	0	2.04	27.4	2.08	28.3	2.14	29.5
0	49	0	2.07	28.2	2.10	28.7	2.11	29.6
1	8	0	2.10	28.6	2.10	29.0	2.10	29.8
1	41	0	2.09	29	2.12	29.4	2.12	30.
1	58	0	2.12	29.2	2.12	29.6	2.10	30.1
2	00	0		29.2		29.6		30.1

Room temperature 29°C

APPENDIX 5
Table 2.29 (sheet 4)

Battery Number 29 (Cont'd)
1/30/53

TEST DISCHARGE

	Cell 1	Cell 2	Cell 3
OCV(m)	1.99	1.96	1.92
Specific gravity	1.060	floating	Not floating
Temperature of cell	29	29.4	29.9

Discharged at 10 amps to one volt

Cell 1			Cell 2			Cell 3		
Min.	Volts	Temp.	Min.	Volts	Temp.	Min.	Volts	Temp.
0	1.99	29°	0	1.93	29.4°	0	1.87	29.6°
0:05	1.91		0:05	1.86		0:05	1.76	
2:00	1.88		9:00	1.80		5:00	1.51	
5:00	1.86		17:00	1.76		9:00	1.66	
15:00	1.84		21:00	1.67		12:00	1.62	
20:00	1.81		21:58	1.00	29.6	14:00	1.57	
24:21	1.00	29.2				16:00	1.50	
						17:00	1.40	
						18:30	1.20	
						19:25	1.10	29.9

Room Temperature	29 °C	29 °C	29 °C
Watt hours	2.13	8.63	3.67

Battery Number 29 (Cont'd)

1/31/53

RECOVERY DISCHARGE

	Cell 1	Cell 2	Cell 3
OCV(m)	1.90	1.86	1.77
Specific gravity	1.075	Floating	Floating
Temperature of cell	27.5	27.7	27.6
Room temperature	23.5		

Discharged at 5 amps to one volt

Cell 1		Cell 2		Cell 3	
Init. Temp.	27.2°C		27.5°C		27.5°C
Min.	Volts	Min.	Volts	Min.	Volts
:00	1.895	0:00	1.860	0:00	1.765
:05	1.845	0:05	1.81	0:05	1.645
:30	1.81	0:30	1.79	0:30	1.640
1:00	1.79	1:00	1.775	1:00	1.630
2:00	1.735	2:00	1.775	2:00	1.615
2:58.3	1.00	4:00	1.765	3:00	1.600
		6:00	1.760	4:00	1.585
		8:00	1.740	5:00	1.575
		10:00	1.715	6:00	1.560
		11:00	1.695	7:00	1.540
		12:00	1.640	8:00	1.520
		12:30	1.540	9:00	1.495
		12:45	1.31	10:00	1.475
		13:00	1.20	11:00	1.445
		13:06.7	1.00	12:00	1.415
				13:00	1.380
				14:00	1.345
				14:30	1.320
				15:00	1.305
				15:30	1.275
				16:00	1.240
				16:30	1.215
				17:00	1.185
				17:30	1.155
				18:00	1.120
				18:30	1.080
				19:00	1.040
				19:32.7	1.00
Final Temperature	27.3		27.6		27.8

APPENDIX 5

Table 2.30. Charge and discharge data (distilled water)

Battery Number 30

1/29/53

	Cell 1	Cell 2	Cell 3
OCV(m)	0.802	0.938	0.889
Date 1/29/53			
CC water added	500	533	515
OCV(m)	0.818	0.948	0.895

PRE-TEST CHARGE

Date 1/30/53			
Cell temperature	26.1°C	26.3°C	27.0°C
OCV(m)	0.805	0.935	0.895
Specific gravity	not floating	not floating	not floating

Charged for 1 hour at 5 amps

Min.	Volts	Temp.	Volts	Temp.	Volts	Temp.
0:00	0.805	26.1	0.925	26.3	0.895	27.0
4:00	3.25		2.65		2.7	
5:00	3.1		2.45		2.6	
7:00	2.95		2.35		2.55	
9:00	2.825		2.240		2.425	
16:00	2.615	26.3	2.125	26.8	2.275	27.0
21:00	2.485		2.070		2.20	
30:00	2.360	26.8	2.035	27.0	2.135	27.1
42:00	2.265		2.005		2.080	
50:00	2.215		2.000		2.065	
59:00	2.195	27.5	2.195	27.9	2.045	27.7
60:00 Off charge						
		27.6		27.9		27.8

APPENDIX 5
Table 2.30 (sheet 2)

Battery Number 30 (Cont'd)
1/30/53

PRE-TEST DISCHARGE

	Cell 1	Cell 2	Cell 3
Specific gravity	Not floating	Not floating	Not floating
OCV(m)	1.820	1.820	1.825
Temperature of cell	27.6°C	28.0°C	28.0°C
Room temperature	27.5	27.5	27.5

Discharged at 5 amps to one volt

Cell 1			Cell 2			Cell 3		
Min.	Volts	Temp.	Min.	Volts	Temp.	Min.	Volts	Temp.
0:00	1.785	27.8°	0:00	1.795	28.0°	0:00	1.785	28.2°
:05	1.565		:05	1.685		:05	1.65	
:30	1.52		:30	1.675		:20	1.63	
1:00	1.465		1:00	1.660		:30	1.62	
1:30	1.375		2:00	1.63		1:00	1.59	
2:00	1.225	27.8°	3:30	1.60		1:30	1.56	
2:15	1.125		5:00	1.555		2:00	1.52	
2:30	1.03		6:00	1.520		2:30	1.47	
2:33.7	1.00		7:00	1.465		3:00	1.380	
		27.8°	7:30	1.430		3:15	1.320	
			8:00	1.375		3:30	1.23	
			8:30	1.315		3:45	1.13	
			8:45	1.230		4:01	1.00	
			9:00	1.235				28.4°
			9:15	1.190				
			9:30	1.140				
			9:45	1.085				
			10:00	1.025				
			10:06.2	1.00				
					28.2°			
Watt hours	0.29			1.26			0.49	

APPENDIX 5
Table 2.30. (sheet 3)

Battery Number 30 (Cont'd)
1/30/53

TIST CHARGE

	Cell 1	Cell 2	Cell 3
Cell temperature	28.0°	28.3°	28.6°
OCV(m)	1.700	1.700	1.735
Specific gravity	Not floating	Not floating	Not floating

Charged at 5 amps for two hours

Min.	Volts	Temp.	Volts	Temp.	Volts	Temp.
0:00	1.685	28.3	1.700	28.6	1.735	28.6
:05	2.18		1.96		2.00	
:30	2.22		1.98		2.025	
1:00	2.22		2.00		2.035	
5:00	2.22	28.5	2.215	28.6	2.06	28.7
6 to 7	AD-X2 added					
8:00	2.185	28.7	2.02	28.6	2.06	28.7
9:00			$MgSO_4$ + Na_2SO_4		Added	
10:00	2.180	29.0	2.015	28.7	2.065	28.7
15:00	2.160	29.2	2.010	28.9	2.055	28.7
30:00	2.115	30.3	2.005	29.0	2.025	29.0
46:00	2.095	29.6	2.005	29.2	2.025	29.1
60:00	2.085	29.8	2.005	29.2	2.025	29.1
75:00	2.065	30.0	2.010	29.6	2.020	29.4
105:00	2.060	30.6	2.020	30.1	2.025	30.2
119:00	2.045		2.035		2.025	
120:00 Off						
		30.8		30.2		30.5

APPENDIX 5
Table 2.30 (sheet 4)

Battery Number 30 (Cont'd)
1/30/53

TEST DISCHARGE

	Cell 1	Cell 2	Cell 3
OCV(m)	1.845	1.920	1.895
Specific gravity	Just floating	Not floating	Not floating
Temperature of cell	30.8	30.2	30.6

Discharged at 10 amps to one volt

Cell 1			Cell 2			Cell 3		
Min.	Volts	Temp.	Min.	Volts	Temp.	Min.	Volts	Temp.
0:00	1.835	30.9	0:00	1.900	30.5	0:00	1.860	30.6
:05	1.66		:05	1.820		:05	1.755	
:30	1.645		:30	1.80		:30	1.745	
1:00	1.625		1:00	1.795		1:00	1.740	
2:00	1.595		4:00	1.775		3:00	1.720	
3:00	1.55		7:00	1.755		5:00	1.700	
3:30	1.525		10:00	1.740	30.5	7:00	1.675	
4:00	1.500		13:00	1.725		9:00	1.630	
4:30	1.475		16:00	1.705		11:00	1.575	
5:00	1.440		20:00	1.675		12:00	1.505	
5:30	1.405		26:00	1.575		12:30	1.445	
6:00	1.375		28:00	1.495		13:00	1.24	
6:30	1.325		29:00	1.435		13:30.0	1.00	
7:00	1.275		29:30	1.340				30.8
7:30	1.205		30:00	1.240				
8:00	1.140		30:15	1.215				
8:30	1.050		30:30	1.16				
8:56.2	1.000		30:45	1.1				
		30.9	31:00	1.04				
			31:10.2	1.00				
					31.0			
Watt hours	2.13			8.63			3.67	

APPENDIX 5
Table 2.30 (sheet 5)

Battery Number 30 (Cont'd)
1/31/53

RECOVERY DISCHARGE

	Cell 1	Cell 2	Cell 3
OCV(n)	1.08	1.80	1.77
Specific gravity	Not floating	Not floating	Not floating
Room temperature	28.7°	28.7°	28.7°
Cell temperature	28.3°	28.5°	29.0°

Discharged at 5 amps to one volt

Cell 1			Cell 2			Cell 3		
Min.	Volts	Temp.	Min.	Volts	Temp.	Min.	Volts	Temp.
0:00	1.08	28.2	0:00	1.795	28.3	0:00	1.765	28.9
:01	1.00		:05	1.685		:05	1.615	
			:30	1.665		:30	1.590	
			1:00	1.660		1:00	1.565	
			2:00	1.640		2:00	1.530	
			3:00	1.625		2:30	1.505	
			4:00	1.605		3:00	1.475	
			5:00	1.590		3:30	1.435	
			6:00	1.575		4:00	1.365	
			8:00	1.525		4:30	1.290	
			9:00	1.500		4:45	1.225	
			10:00	1.465		5:00	1.155	
			11:00	1.435		5:15	1.08	
			11:30	1.405		5:31.5	1.00	
			12:00	1.385				28.9
			12:30	1.355				
			13:00	1.320				
			13:30	1.295				
			14:00	1.255				
			14:30	1.215				
			15:00	1.155				
			15:30	1.120				
			16:00	1.060				
			16:35.0	1.000				
					28.7			

APPENDIX 5

Two-second voltages obtained on a 5-ampere flash charge of discarded batteries before being dumped and drained of electrolyte.

Battery Number	Cell 1	Cell 2	Cell 3
	volts*	volts	volts
1	4.00	50.0	11.0
2	3.1	3.8	3.3
3	3.6	3.9	3.7
4	3.3	3.0	2.6
5	5.0	4.2	4.0
6	5.3	4.6	4.1
7	2.8	2.1	3.5
8	2.9	2.3	3.0
9	3.1	3.0	3.1
10	5.5	9.5	5.0
11	3.3	4.3	3.0
12	3.5	9.0	2.8
13	4.1	4.9	44.0
14	3.5	4.5	5.5
15	3.4	4.6	8.7
16	55.0	13.0	18.0
17	6.0	5.0	5.3
18	4.8	2.6	2.4
19	3.4	3.5	3.0
20	3.0	3.0	2.6
21	3.1	3.2	3.1
22	2.7	4.9	6.7
23	2.8	4.5	15.0
24	2.7	3.0	3.2
25	3.2	3.0	3.1
26	5.0	3.5	3.5
27	4.0	2.1	2.4
28	2.7	3.8	3.2
29	2.8	3.3	3.3
30	2.3	3.0	2.7

*High voltages indicate high internal resistance.

APPENDIX 6: Data Relating to Important Properties of the Components of Lead-acid Storage Batteries.

1. Determination of solubility of lead sulfate.

2. The charging process and the rate of conversion of lead sulfate to lead and sulfuric acid.

3. Tests of prevention of "Sulfation".

4. The discharge process at various rates and for electrolytes of various specific gravities.

5. Viscosity.

6. Resistivity.

7. Cell voltages and plate potentials during discharge of automotive cells containing treated and untreated electrolytes at various specific gravities.

APPENDIX 6

TABLE 1

Solubility of lead sulfate in untreated and treated sulfuric acid solutions. Temperature 25°C.

Specific gravity of H_2SO_4	Weight percent H_2SO_4	Micrograms of lead sulfate per milliliter of solution		
		Acid Solution	Acid Solution + AD-X2**	Acid Solution + $MgSO_4$ and Na_2SO_4 ***
Water	0.00	----------	< 0.3	~~5.06±0.09~~
1.0050	0.789	4.64±0.15*	4.72±0.10	4.89±0.15
1.0087	1.49	4.80±0.16	5.00±0.24	5.06±0.09
1.020	2.94	5.69±0.06	5.66±0.12	5.66±0.03
1.045	7.48	6.23±0.03	6.15±0.07	--------
1.069	10.40	6.53±0.03	6.47±0.09	6.47±0.07
1.097	14.47	6.15±0.05	6.13±0.09	6.01±0.17

*Standard deviation.

**Each solution prepared by dissolving the contents of one envelope or 21 grams of AD-X2 in the quantity of acid solution required for a final volume of 1000ml.

***Synthetic solutions of the same composition as the solutions in previous column.

Specific gravity and weight percent of solutions.

Sulfuric Acid Solution		Sulfuric Acid Solution + AD-X2		Sulfuric Acid Solution + $MgSO_4$ and Na_2SO_4	
Sp.Gr.	Wt. % H_2SO_4	Sp.Gr.	Wt. % H_2SO_4	Sp.Gr.	Wt. % H_2SO_4
1.0050	0.789	1.022	0.743	1.022	0.768
1.0087	1.49	1.026	1.45	1.026	1.44
1.020	2.94	1.036	2.88	1.034	2.84
1.045	7.48	1.061	7.31	----	----
1.069	10.40	1.083	10.14	1.084	10.18
1.097	14.47	1.111	14.14	1.112	14.14

APPENDIX 6

TABLE 2

Solubility of Lead Sulfate in the Electrolyte of treated and Untreated Cells

TREATED CELLS					UNTREATED CELLS				
Battery No.	Cell No.	Sp. Gr. of Electrolyte	$mgPbSO_4$ Per liter	Ratio*	Battery No.	Cell No.	Sp. Gr. of Electrolyte	$mgPbSO_4$ Per liter	Ratio*
23	3	1.066	7.5	1.13	23	2	1.060	7.6	1.15
23	1	1.070	7.5	1.13	23	2	1.060	8.0	1.22
23	3	1.101	9.2	1.46	23	2	1.101	7.6	1.22
23	1	1.103	7.6	1.21	23	2	1.130	6.3	1.14
23	3	1.145	6.4	1.29	22	1	1.165	5.7	1.26
23	1	1.150	6.1	1.27	23	2	1.180	5.9	1.55
21	1	1.170	5.0	1.23	31		1.194**	4.2	1.26
21	3	1.170	5.0	1.23	24	3	1.196	4.7	1.45
23	3	1.195	5.0	1.51	24	1	1.199	4.7	1.47
23	1	1.198	6.4	1.96	22	3	1.240	3.4	1.44
24	2	1.213	4.7	1.62	22	1	1.240	3.4	1.44
32		1.216**	4.1	1.45	18j		1.267**	1.5	0.76
22	2	1.245	3.1	1.35	22	1	1.279	4.4	2.37
7E		1.276**	2.8	1.49	21	2	1.280	2.8	1.51
20H		1.278**	1.2	0.66	22	1	1.280	2.2	1.19
" 21	1	1.280	1.8	0.98	22	3	1.281	2.5	1.36
21	3	1.280	1.5	0.82	10D		1.284**	2.5	1.40
8C		1.284**	2.3	1.29	17F		1.286**	1.0	0.58
21	1	1.285	2.6	1.49	9B		1.297**	2.6	1.62
22	2	1.288	2.6	1.52	25A		1.298**	3.7	2.31
19I		1.294**	2.5	1.52					
26E		1.295**	2.9	1.77					
			(Ave.)	1.34				(Ave.)	1.39

* This expresses the solubility relative to that in pure H_2SO_4 Solutions at 25°C.

** Cells of truck Batteries; others are cells of automotive Batteries

APPENDIX 6

TABLE 3

Charging Efficiency for Negative Plates
At Low Specific Gravities (1.021) and Low Charge Rate (1 Ampere)

Input = 575 ampere minutes

	Pair		Pair	
Plate No.	1p	2p	3p	4p
Designation	Untreated	Treated	Untreated	Treated
Original Solution (grams H_2SO_4/360ml)*	11.76	11.74	11.76	11.74
Specific gravity of acid (prior to treatment)	1.021	1.021	1.021	1.021
Input (ampere minutes)				
Cycle 1 Minutes at 1 amp.	120	120	120	120
Cycle 2 Minutes at 1 amp.	180	180	180	180
Cycle 3 Minutes at 1 amp.	275	275	275	275
TOTAL AMPERE MINUTES	575	575	575	575
Output				
Cycle 1 Minutes at 2 amps.	10.9	11.2	12.1	15.8
Cycle 2 Minutes at 2 amps.	35.8	38.0	38.8	46.1
TOTAL AMPERE MINUTES	93.4	98.4	101.8	123.8
Excess Input (ampere minutes)	481.6	476.6	473.2	451.2
Final Solution (gram H_2SO_4/360ml)*	25.09	23.08	24.12	22.39
Acid Formed (gram H_2SO_4/360ml)	13.33	11.34	12.36	10.65
Theoretical Acid**	14.68	14.53	14.43	13.76
% Efficiency	90.8	78.0	85.7	77.4

*Determined in g/10ml by alkali titration.

**Equivalent to excess input.

(In Tables 3 through 9 the outputs were calculated for the total discharge time. This time in all cases exceeded the time required for the lead-cadmium potential to reach one volt.)

TABLE 4

Charging Efficiency for Negative Plates at Various Specific Gravities and Low Charge Rate (1 Ampere)

(Input = 930 Ampere Minutes)

	Pair		Pair		Pair	
Plate No.	17	21	18	24	19	26
Designation	T	U	T	U	T	U
Original Solutions (gram H_2SO_4/360ml)*	~~11.23~~ 11.23	~~11.23~~ 11.23	~~56.48~~ 56.48	~~57.74~~ 57.74	~~86.36~~ 86.36	~~88.56~~ 88.56
Specific gravity (Prior to treatment)	1.020	1.020	1.100	1.100	1.150	1.150
Input - Ampere Minutes						
Cycle 1 Minutes at 1 Amp.	120	120	120	120	120	120
Cycle 2 Minutes at 1 Amp.	270	270	270	270	270	270
Cycle 3 Minutes at 1 Amp.	540	540	540	540	540	540
TOTAL AMPERE MINUTES	930	930	930	930	930	930
Output						
Cycle 1 Minutes at 2 Amps.	23.6	9.2	28.8	27.4	24.6	25.4
Cycle 2 Minutes at 2 Amps.	87.5	54.6	93.4	93.8	86.5	87.0
TOTAL AMPERE MINUTES	222.2	127.6	244.4	242.4	222.2	224.8
Excess Ampere Minutes	707.8	302.4	685.6	687.6	707.8	705.2
Final Solution (gram H_2SO_4/360ml)*	27.72	32.87	72.40	74.45	100.12	105.23
Acid Formed (gram H_2SO_4/360ml)	16.49	21.64	15.92	16.71	13.76	16.67
Theoretical Acid - Equivalent to excess input	21.58	24.47	20.90	20.96	21.58	21.50
Charging Efficiency	76.4	38.4	76.1	79.7	63.8	77.5

*Determined in g/10ml by alkali titration. T = TREATED; U = UNTREATED.

APPENDIX 6

TABLE 5

Charging Efficiency for Negative Plates
At Low Specific Gravities (1.020)
And Low Charge Rate (1 Ampere)

(Input = 1430 Ampere Minutes)

	PAIR	
Plate No.	3r	4r
Designation	Untreated	Treated
Original Solution (gram H_2SO_4/360ml)*	11.23	10.98
Specific gravity (prior to treatment)	1.020	1.020
Input - Ampere minutes		
Cycle 1 Minutes at 1 Amp.	210	210
Cycle 2 Minutes at 1 Amp.	435	435
Cycle 3 Minutes at 1 Amp.	785	785
TOTAL AMPERE MINUTES	1430	1430
Output		
Cycle 1 Minutes at 2 Amps.	31.2	41.7
Cycle 2 Minutes at 2 Amps.	91.0	116.5
TOTAL AMPERE MINUTES	244.4	316.4
Excess Input (Ampere minutes)	1185.6	1113.6
Final Solution (grams H_2SO_4/360ml)*	45.18	40.39
Acid Formed (grams H_2SO_4/360ml)	33.95	29.41
Theoretical Acid**	36.15	33.95
Charging Efficiency	93.9	86.6

* Determined in g/10ml by alkali titration.

**Equivalent to excess input.

TABLE 6

Charging Efficiency for Negative Plates
At Low Specific Gravities (1.020) and Low Charge Rate (1 Ampere)
(Input = 2517 Ampere Minutes)

Plate No.	31	32	33	34	1r	2r
Designation	Untreated	Treated[a]	Untreated	Treated[b]	Untreated	Treated[b]
Original Solution (grams H_2SO_4/360ml)*	11.23	10.98	11.23	10.76	11.23	10.76
Specific gravity (prior to treatment)	1.020	1.020	1.020	1.020	1.020	1.020
Input - Ampere Minutes						
Cycle 1 Minutes at 1 Amp.	210	210	210	210	210	210
Cycle 2 Minutes at 1 Amp.	435	435	435	435	435	435
Cycle 3 Minutes at 1 Amp.	785	785	785	785	785	785
Cycle 4 Minutes at 1 Amp.	1087	1087	1087	1087	1087	1087
TOTAL AMPERE MINUTES	2517	2517	2517	2517	2517	2517
Output						
Cycle 1 Minutes at 2 Amps.	19.8	33.2	19.3	30.8	26.3	47.8
Cycle 2 Minutes at 2 Amps.	59.2	85.5	64.3	81.0	87.0	119.2
Cycle 3 Minutes at 2 Amps.	191.0	212.5	202.0	212.5	219.0	254.0
TOTAL AMPERE MINUTES	540.0	662.4	571.2	648.6	664.6	842.0
Excess Input (Ampere Minutes)	1977.0	1854.6	1945.8	1868.4	1852.4	1675.0
Final Solution (grams H_2SO_4/360ml)*	63.36	60.01	61.70	59.18	61.34	55.84
Acid Formed (grams H_2SO_4/360ml)	52.13	49.03	50.47	48.42	50.11	45.08
Theoretical Acid **	60.28	56.55	59.33	56.97	56.48	51.07
Charging Efficiency	86.5	86.7	85.1	85.0	88.7	88.3

*Determined in grams/10ml by alkali titration. **Equivalent to excess input.

a/ Treated AD-X2.

b/ Treated with a mixture of magnesium and sodium sulfates in the same proportions as present in AD-X2.

TABLE 7

Charging Efficiency for Negative Plates at Low Specific Gravities (1.020), Successive Cycles at Different Charge and Discharge Rates. Various Amounts of AD-X2. (Input = 1052.5 Ampere Minutes)

	Pair		Pair		Pair		Pair	
Plate No.	11	12	13	14	21	22	23	24
Designation	U	T 1/	U	T 2/	U	T 3/	U	T 4/
Original Solution (grams H_2SO_4/360ml)*	11.27	11.27	11.27	11.27	11.27	11.27	11.27	11.27
Specific gravity (prior to treatment)	1.020	1.020	1.020	1.020	1.020	1.020	1.020	1.020
Input - Ampere Minutes								
Cycle 1 180 Minutes at 0.5 Amps.	90	90	90	90	90	90	90	90
Cycle 2 60 Minutes at 6.0 Amps.	360	360	360	360	360	360	360	360
Cycle 3 605 Minutes at 0.5 Amps.	302.5	302.5	302.5	302.5	302.5	302.5	302.5	302.5
Cycle 4 600 Minutes at 0.5 Amps.	300	300	300	300	300	300	300	300
TOTAL AMPERE MINUTES	1052.5	1052.5	1052.5	1052.5	1052.5	1052.5	1052.5	1052.5
Output								
Cycle 1 Minutes at 2 Amps.	5.8	6.3	5.7	6.9	5.9	7.8	5.7	9.1
Cycle 2 Minutes at 6 Amps.	8.0	7.5	7.9	8.8	7.1	5.8	6.0	5.1
Cycle 3 Minutes at 2 Amps.	77.5	69.5	72.2	89.0	86.5	73.8	66.2	67.0
TOTAL AMPERE MINUTES	214.6	196.6	203.2	244.6	227.4	198.0	179.8	182.8
Excess - Ampere Minutes	837.9	855.9	849.3	807.9	825.1	854.5	872.7	869.7
Final Solution (grams H_2SO_4/360ml)*	32.36	31.50	32.65	30.74	32.54	29.56	32.15	28.04
Acid Formed (grams H_2SO_4/360ml)	21.09	20.23	21.38	19.47	21.27	18.29	20.88	16.77
Theoretical Acid**	25.55	26.10	25.90	24.63	25.16	26.05	26.61	26.52
Charging Efficiency	82.5	77.5	82.5	79.0	84.5	70.2	78.5	63.2

*Determined in g/10ml by Alkali titration. **Equivalent to excess input.
1/ 3 grams AD-X2/360ml; 2/ 6 grams AD-X2/360ml; 3/ 9 grams AD-X2/360ml; 4/ 18 grams AD-X2/360ml.

TABLE 8

Charging Efficiency for Negative Plates at Low Specific Gravities (1.020) and High Charge Rate (6 Amperes)
(Input = 1080 ampere minutes)

	Pair		Pair		Pair	
Plate Number	1	2	3	4	5	6
Designation	Untreated	Treated	Untreated	Treated	Untreated	Treated
Original Solution (grams H_2SO_4/ 360 ml)*	11.23	11.23	11.23	11.23	11.23	11.23
Specific Gravity (prior to treatment)	1.020	1.020	1.020	1.020	1.020	1.020
Input-Amp.Mins.						
Cycle 1 60 mins.@ 6 Amps	360	360	360	360	360	360
Cycle 2 120 mins.@ 6 Amps	720	720	720	720	720	720
Total Amp-Mins.	1080	1080	1080	1080	1080	1080
Output - Cycle 1 Mins @ 6 Amps	5.5	4.4	3.8	3.8	3.2	3.6
Total Amp-Mins.	33.0	26.4	22.8	22.8	19.2	21.6
Excess Input (Amp-Min.)	1047.0	1053.6	1057.2	1057.2	1060.8	1058.4
Final Solution (grams H_2SO_4/ 360 ml)*	30.27	20.66	29.35	19.26	29.01	19.70
Acid formed (grams H_2SO_4/ 360 ml)	19.04	9.43	18.12	8.03	17.78	8.47
Theoretical Acid**	31.92	32.12	32.23	32.23	32.34	32.27
Charging Efficiency	59.6	29.3	56.2	24.9	55.0	26.2

*Determined in g/10 ml by alkali titration.
**Equivalent to excess input.

Table 9
Charging Efficiency for Negative Plates at Low Specific Gravities (1.020)
(Input - 1920 ampere-minutes)

	Pairs		Pairs	
Plate Number	1S	2S	3S	4S
Designation	Untreated	Treated	Untreated	Treated
Original Solution (grams H_2SO_4/360 ml)*	11.23	11.23	11.23	11.23
Specific Gravity (prior to treatment)	1.020	1.020	1.020	1.020
Input Amp-Mins.				
Cycle 1 30 min. @ 6 amps.	180	180	180	180
2 60 min. @ 6 amps.	360	360	360	360
3 60 min. @ 6 amps.	360	360	360	360
4 75 min. @ 6 amps.	450	450	450	450
5 95 min. @ 6 amps.	570	570	570	570
Total Amp-Mins.	1920	1920	1920	1920
Output				
Cycle 1 min. @ 6 amps.	0.7	1.3	0.7	0.9
2 mins. @ 6 amps.	3.0	3.9	2.5	2.0
3 mins. @ 2 amps.	42.8	38.8	34.8	29.0
4 mins. @ 6 amps.	16.6	14.3	13.2	10.0
Total Amp-Min.	207.4	194.6	160.0	145.0
Excess Input (Amp. Min.)	1712.6	1725.4	1752.0	1775.0
Final Solution (grams H_2SO_4/360 ml)*	34.27	24.88	28.40	22.79
Acid Formed (grams H_2SO_4/360 ml)	23.04	13.65	17.17	11.56
Theoretical Acid**	52.22	52.61	53.42	52.12
Charging Efficiency	44.1	25.9	32.1	21.8

* Determined in g/10 ml by alkali titration.
** Equivalent to excess input.

APPENDIX 6

TABLE 10

Minutes of discharge in 1.200 sp.gr. H_2SO_4 for the charged plates discussed in Tables 3 to 9, inclusive

No.*	Designation	Discharge Rate (amperes)	Minutes of Discharge
1p) pair	U	2	163.0
2p)	T	2	128.2
3p) pair	U	2	157.8
4p)	T	2	131.4
11) pair	U	2	238.7
12)	T	2	224.4
13) pair	U	2	233.6
14)	T	2	217.0
21) pair	U	2	230.5
22)	T	2	203.5
23) pair	U	2	236.8
24)	T	2	189.2
1) pair	U	6	71.0
2)	T	6	30.5
3) pair	U	6	64.8
4)	T	6	30.8
5) pair	U	6	63.9
6)	T	6	28.9
1s) pair	U	6	81.7
2s)	T	6	48.8
3s) pair	U	6	58.3
4s)	T	6	35.8

* Numbers correspond to those given in Tables 3 to 9, inclusive.

APPENDIX 6

TABLE 11

Relative internal resistance of treated (AD-X2) or untreated batteries (or cells) as a function of storage time under conditions of fluctuating temperatures. Batteries under room temperature storage were used as controls.

Battery or Cell Number	Designation	Days of storage***			
		49	86	148	207
1A	Untreated	--	0.030	0.078	0.132
1B	Treated	--	.036	.058	.122
2A	Untreated	--	0.064	0.092	0.164
2B	Treated	--	.072	.116	.256
3A	Untreated	--	0.092	0.101	0.144
3B	Treated	--	.094	.098	.146
4A1	Untreated cell	--		0.024	0.036
4A2	Treated cell	--	(0.024)*	.026	.038
4A3	Untreated cell	--		.024	.036
4B1	Treated cell	--		0.020	0.036
4B2	Untreated cell	--	(0.021)*	.008	.032
4B3	Treated cell	--		.028	.038
5A1	Untreated cell	--		0.024	0.038
5A2	Treated cell	--	(0.027)*	.024	.036
5A3	Untreated cell	--		.024	.027
5B1	Treated cell	--		0.026	0.036
5B2	Untreated cell	--	(0.024)*	.025	.036
5B3	Treated cell	--		.025	.036
6A	Untreated	--	0.030	0.058	0.118
6B	Treated	--	.034	.056	.120
7A**	Untreated	0.028	0.034	0.044	0.080
7B**	Untreated	.031	.034	.040	.068
8A**	Treated	0.030	0.034	0.044	0.074
8B**	Treated	.028	.036	.204	.116
		Room temperature storage			
9A	Untreated	0.026	0.025	0.029	0.036
9B	Treated	.026	.026	.036	.052

*Whole battery

**In glass containers

***Stored at 50°C during the day and cooled over night for 5 days a week; cooled over the week end.

APPENDIX 6 TABLE 12

Summary of changes in the internal resistance of treated (AD-X2) or untreated batteries or cells

Designation	Days of storage				Difference between values at 49 and 207 days or at 148 and 207 days
	49	86	148	207	(207-49 days)
	Internal resistance				
	ohms	ohms	ohms	ohms	ohms
Untreated batteries	0.030*	0.047	0.069	0.118	0.089
Treated batteries	.029*	.051	.096	.139	.110
					(207-148 days)
Untreated cells	--	--	0.021	0.035	0.014
Treated cells	--	--	.025	.037	.012
	At room temperature				(207-49 days)
Untreated battery	0.026	0.025	0.029	0.036	0.010
Treated battery	.026	.026	.036	.052	.026

*Two batteries

APPENDIX 6

Table 13 - Effect of "AD-X2" on the discharge of negative plates charged at low rate in H_2SO_4 of extremely low specific gravity.

Cycle	Minutes charged at 1 amp	pair 1.021	1.021 +AD-X2	pair 1.021	1.021 +AD-X2
		Discharged at 2 amperes (minutes)			
1	120	10.8	10.8	11.9	15.3
2	180	35.8	37.4	38.4	45.2

Cycle	Minutes charged at 0.5 amp	pair 1.020	1.020 +AD-X2	pair 1.020	1.020 +AD-X2	pair 1.020	1.020 +AD-X2	pair 1.020	1.020 +AD-X2
		Discharged at 2 amperes (minutes)							
1	180	5.7	6.2	5.6	6.8	5.8	7.5	5.6	8.7
2	605	77.0	69.2	72.0	87.7	71.5	64.0	64.0	63.5

Ratios (treated/untreated)

	At 1 amp				
1	120	1.00	1.29	---	---
2	180	1.04	1.18	---	---
	At 0.5 amp				
1	180	1.09	1.21	1.29	1.55
2	605	0.90	1.22	0.90	0.99

APPENDIX 6

Table 14 - Effect of "AD-X2" on the discharge of negative plates charged at high rate in H_2SO_4 of extremely low specific gravity

Cycle	Minutes charged at 6 amperes	pair 1.020	1.020 +AD-X2	1.020	1.020 +AD-X2	1.020	1.020 +AD-X2
		Discharged at 6 amperes (minutes)					
1	60	5.3	3.6	3.7	3.0	2.9	2.7

Cycle	Minutes charged at 6 amperes	pair 1.020	1.020 +AD-X2	1.020	1.020 +AD-X2
		Discharged at 6 amperes (minutes)			
1	30	0.73	0.75	0.67	0.75
2	60	3.0	2.7	2.3	2.0
3	75	16.4	13.3	12.9	9.6

		Ratios (treated/untreated)		
1	60	0.68	0.81	0.93
1	30	1.03	1.12	
2	60	0.90	0.87	
3	75	.81	.74	

Remarks: The additive is not effective in opening up "sulfated" nagative plates at high rates of charge in solutions so dilute as 1.020 in specific gravity.

APPENDIX 6

Table 15 - "Effect of "AD-X2" or a comparable mixture of magnesium and sodium sulfates on cycle discharge of negative plates charged at low rate in H_2SO_4 of extremely low specific gravity.

Cycle	Minutes charged at 1 ampere	pair 1.020	pair 1.020 +AD-X2	pair 1.020	pair 1.020 $MgSO_4$* Na_2SO_4	pair 1.020	pair 1.020 $MgSO_4$ * Na_2SO_4
		Discharged at 2 amperes (minutes)					
1	210	19.7	31.5	19.1	28.7	26.1	46.9
2	435	58.8	83.1	63.8	77.5	86.4	117.0
3	785	190.2	208.5	201.5	206.7	218.2	249.0
4	1087	344.6	344.4	354.7	356.7	330.4	354.6
5	1270	497.6	492.6	498.5	503.1	474.0	508.1

Cycle	Minutes charged at 0.5 ampere	pair 1.020	pair 1.020 $MgSo_4$*	pair 1.020	pair 1.020 $MgSO_4$*	pair 1.020	pair 1.020 $MgSO_4$*	pair 1.020	pair 1.020 $MgSO_4$*
		Discharged at 2 amperes (Minutes)							
1	60	2.4	4.3	2.2	4.6	1.5	4.1	1.8	4.2
2	120	7.3	12.5	6.9	11.3	5.5	13.1	6.5	12.1
3	360	24.0	38.6	23.5	34.5	22.3	41.4	21.3	34.5
4	780	81.4	106.1	75.3	94.2	70.7	110.2	71.2	92.5
5	1080	171.7	187.5	166.3	180.8	160.9	189.5	163.0	176.5

*Synthetic mixture of magnesium and sodium sulfates in composition comparable to "AD-X2".

APPENDIX 6

Table 16 - Ratios (treated/untreated) for data of table 15 .
(For extremely low specific gravities)

Cycle	Minutes charged at 1 ampere	Ratio	Ratio	Ratio
1	210	1.60	1.50	1.80
2	435	1.41	1.21	1.35
3	785	1.10	1.03	1.14
4	1087	1.00	1.01	1.07
5	1270	0.99	1.01	1.07

Cycle	Minutes charged at 0.5 ampere	Ratio	Ratio	Ratio	Ratio
1	60	1.79	2.09	2.73	2.33
2	120	1.71	1.64	2.33	1.86
3	360	1.61	1.47	1.86	1.62
4	480	1.30	1.25	1.56	1.30
5	1080	1.09	1.09	1.18	1.08

Note: Note that the "apparent" beneficial effect disappears as the plates are cycled. As more acid is formed during charge for untreated cells, the total solute increases, and the "apparent" beneficial effects of "AD-X2" become insignificant.

APPENDIX 6

Table 17 - Effect of "AD-X2" on the discharge of negative plates charged at low rate in H_2SO_4 of moderate specific gravity

Cycle	Minutes charged at 1 ampere	pair 1.098	pair 1.098 +AD-X2	pair 1.098	pair 1.098 +AD-X2	pair 1.098	pair 1.098 +AD-X2	pair 1.098	pair 1.098 +AD-X2
		Discharged at 5 amperes (minutes)							
1	255	14.6	15.2	15.3	14.5	15.5	14 6	14.0	14.7
2	450	39.6	40.5	38.5	37.4	39.2	39.5	37.3	41.3
		Ratios (treated/untreated)							
1	255		1.04		0.95		0.94		1.05
2	450		1.02		.97		1.01		1.11

Table 18 - Effect of "AD-X2" on the discharge of negative plates charged at high rate in H_2SO_4 of moderate specific gravity.

Cycle	Minutes charged at 6 amperes	pair 1.100	pair 1.100 +AD-X2	pair 1.100	pair 1.100 +AD-X2
		Discharged at 6 amperes (minutes)			
1	60	20.2	10.7	20.0	13.5
2	120	55.8	42.5	56.0	48.5
		Ratios (treated/untreated)			
1	60		0.53		0.68
2	120		.76		.87

APPENDIX 6

Table 19 - Effect of "AD-X2" and comparable mixtures of magnesium and sodium sulfates, or sulfuric acid of same specific gravity on the discharge of negative plates*.

Cycle	Minutes charged at 0.5 ampere	pair 1.200 acid	pair 1.200 acid	pair 1.200 acid	pair 1.200 acid	pair 1.200 acid	pair 1.200 acid	pair 1.200 acid	pair 1.200 acid
		Discharged at 2.0 amperes (minutes)							
1	120	16.9	16.7	17.1	16.5	16.5	16.3	16.3	16.3
2	300	36.2	37.0	39.3	38.7	38.9	37.2	38.5	37.3
3	730	After second cycle all cells were emptied and cells filled with solutions shown immediately below. Cells were then discharged at 2 amperes.							
		1.200 acid	1.200 acid +AD-X2	1.200 acid +$MgSO_4$ and Na_2SO_4	1.200 acid alone	1.200 acid	1.200 acid +AD-X2	1.200 acid +$MgSO_4$ and Na_2SO_4	1.200 acid alone
	sp.gr.	1.200	1.235	1.232	1.233	1.200	1.235	1.232	1.233
		Minutes of discharge							
		74.4	71.1	76.2	79.5	82.0	74.5	78.7	76.7

*All paired plates were taken from same cell of battery.

APPENDIX 6

Table 20. Description of Solutions used in Measurements of Kinematic Viscosity

Solution	Sp. gr.	(temp. °C	Remarks*
1A	1.300	(25.3)	without AD-X2
1B	1.314	(23.6)	with AD-X2 (25.3)**
2A	1.197	(24.2)	without AD-X2
2B	1.211	(23.5)	with AD-X2 (26.7 g)
3A	1.102	(25.4)	without AD-X2
3B	1.118	(24.2)	with AD-X2 (25.8 g)
4A	1.050	(23.5)	without AD-X2
4B	1.068	(26.7)	with AD-X2 (22.5 g)
5A	1.009	(23)	without AD-X2
5B	1.030	(22.4)	with AD-X2 (21.8 g)

*Weight of AD-X2 listed was amount of AD-X2 added to one liter of sulfuric acid of appropriate specific gravity.

**Note that weight of AD-X2 varies from one envelope to another.

APPENDIX 6

Table 21 . Kinematic Viscosity of Solutions in Centistokes

Temperature = 0°C					
% H_2SO_4 (approx)	39.1	27.7	14.6	7.2	1.3
Series	1	2	3	4	5
A	3.56_1	2.71_5	2.15_6	1.94_2	1.82_7
B	3.80_7	2.89_5	2.29_7	2.05_9	1.93_3
B/A	1.069	1.066	1.065	1.060	1.058
temperature = 25°C					
A	1.86_2	1.39_2	1.10_6	0.989_2	0.915_3
B	1.95_7	1.46_4	1.16_6	1.04_2	0.970_3
B/A	1.051	1.052	1.054	1.053	1.060
temperature = 45°C					
A	1.26_0	0.941_8	0.750_1	0.669_3	0.6174
B	1.32_0	0.984_0	0.785_1	0.700_9	0.652_8
B/A	1.048	1.045	1.047	1.047	1.057

APPENDIX 6

Table 22 . Absolute Viscosity of Solutions in Centipoises

Temperature = 0°C					
% H_2SO_4 (approx)	39.1	27.7	14.6	7.2	1.3
Series	1	2	3	4	5
A	4.70	3.29	2.40	2.05	1.85
B	5.07	3.55	2.60	2.22	2.00
B/A	1.08	1.08	1.08	1.08	1.08
temperature = 25°C					
A	2.41	1.66	1.22	1.04	0.921
B	2.56	1.77	1.30	1.11	0.996
B/A	1.06	1.07	1.07	1.07	1.08
temperature = 45°C					
A	1.61	1.11	0.813	0.692	0.615
B	1.71	1.17	0.863	0.738	0.663
B/A	1.06	1.05	1.06	1.07	1.08

APPENDIX 6

Table 23 . Description of Solutions used in Obtaining Resistivities

Solution	Sp. gr. (Temp °C)	Remarks*
1A	1.297 (26.1)	without AD-X2
1B	1.311 (25.0)	with AD-X2 (23.0 g)**
2A	1.201 (25.8)	without AD-X2
2B	1.216 (25.0)	with AD-X2 (22.7 g)
3A	1.104 (24.0)	without AD-X2
3B	1.118 (23.2)	with AD-X2 (21.4 g)
4A	1.049 (22.8)	without AD-X2
4B	1.065 (23.2)	with AD-X2 (23.1 g)
5A	1.009 (23.0)	without AD-X2
5B	1.030 (22.9)	1000 cc sol 5A + 25.3 g AD-X
6A	1.0025 (22)	without AD-X2
6B	1.0215 (22.5)	1000 cc sol 6A + 22.8 g AD-X
AD-X2	$d = 1.019_0$ (23.1°C)	1 envelope AD-X2 in 1 liter H_2O pH = 8.1 at 23°C

A solutions were clear

B and AD-X2 solutions were cloudy and showed a permanent precipitate

*Weight of AD-X2 listed was amount of AD-X2 added to one liter of sulfuric acid of appropriate specific gravity.

**Note that weight of AD-X2 varies from one envelope to another.

APPENDIX 6

Table 24. Resistivity of Solutions in Ohm-centimeters

Temperature = 0°C							
% H_2SO_4 (approx)	38.9	27.4	14.7	7.0	1.3	0.4	0.0
Series	1	2	3	4	5	6	AD-X2
A*	2.137	1.926	2.484	4.486	21.90	80.09	
B**	2.273	2.050	2.627	4.744	22.24	56.53	98.40
B/A	1.064	1.064	1.058	1.058	1.016	.706	
temperature = 25°C							
A*	1.295	1.225	1.666	3.069	15.43	56.50	
B**	1.367	1.294	1.765	3.320	16.14	36.38	52.06
B/A	1.056	1.056	1.059	1.082	1.046	.644	
temperature = 45°C							
A*	.9807	.9606	1.361	2.561	13.22	49.10	
B**	1.031	1.013	1.454	2.818	14.45	29.23	36.81
B/A	1.051	1.055	1.068	1.100	1.093	.595	

* Sulfuric acid solutions.

** Sulfuric acid solutions containing AD-X2.

TABLE 25 - Discharge at 5, 15, and 50 amperes of Automotive Cells containing treated or untreated sulfuric acid solutions, (Sp. Gr. 1.010).

Exp. No.	Cell No.	Envelope of AD-X2 Added	Sp. Gr. of Solution at start of dschge	Rate of dschges amperes	Minutes of Discharge to indicated Volts							
					a 1.75	1.50	1.25	1.00	0.75	0.50	0.25	0.00
1	3	None	1.010	5	2.5*	38.5	42.3	43.5	44.0	44.0	44.0	44.0
1	1	1	1.028	5	2.0	39.0	47.0	52.0	57.0	61.0	64.0	65.5
1	2	2	1.052	5	2.5*	51.5*	61.7*	70.0*	87.5*	118.5*	169.0*	180.0*
2	3	None	1.010	15	0.0	4.6*	5.5	5.8	6.0	6.2	6.3	6.4
2	1	1	1.028	15	0.0	3.4	6.4*	8.0*	8.9	9.3	9.5	9.7
2	2	2	1.050	15	0.0	3.4	6.4*	8.0*	9.6*	11.3*	12.8*	13.9*
3	3	None	1.010	50	0.0	0.1*	0.6*	0.9	0.9	0.9	0.9	1.0
3	1	1	1.030	50	0.0	0.0	0.5	0.9	1.2	1.5	1.6	1.7
3	2	2	1.050	50	0.0	0.0	0.5	1.0*	1.4*	1.9*	2.3*	3.0*

a = Normal end voltage at the 5.0 ampere rate is 1.75 volts for these cells.

* = Indicates maximum time at the indicated volts for each experiment.

TABLE 26 - Discharges at 50 amperes of Automotive Cells containing treated or untreated sulfuric acid solutions of varying specific gravities.

Exp. No.	Cell No.	Sp. Gr. H_2SO_4 Solution	Envelopes of AD-X2 Added	Sp. Gr. of Solution at start of Dischge	Minutes of Discharge to indicated Volts							
					1.75	1.50	1.25	1.00	0.75	0.50	0.25	0.00
3	3	1.010	None	1.010	0.0	0.1*	0.6*	0.9	0.9	0.9	0.9	1.0
3	1	1.010	1	1.030	0.0	0.0	0.5	0.9	1.2	1.5	1.6	1.7
3	2	1.010	2	1.050	0.0	0.0	0.5	1.0*	1.4*	1.9*	2.3*	3.0*
4	3	1.020	None	1.020	0.0	1.9*	2.8*	2.9	3.0	3.0	3.1	3.1
4	1	1.020	1	1.040	0.0	1.3	2.8*	3.5*	4.0*	4.4	4.5	4.7
4	2	1.020	2	1.060	0.0	1.0	2.5	3.3	3.9	4.8*	5.6*	6.2*
5	3	1.040	None	1.040	0.0	8.2*	8.8*	9.0	9.2	9.3	9.4	9.5
5	1	1.040	1	1.056	0.0	7.5	8.7	9.3*	9.7	10.0	10.2	10.4
5	2	1.040	2	1.074	0.0	7.0	8.3	9.3*	10.3*	11.0*	11.8*	12.2*
6	3	1.070	None	1.070	6.5*	18.5*	19.2	19.6	19.8	20.0	20.2	20.6
6	1	1.070	1	1.088	5.4	17.6	19.4*	20.4*	21.0*	21.6	22.3	23.1
6	2	1.070	2	1.102	4.5	16.8	18.6	19.6	20.9	23.1*	25.0*	26.3*
7	3	1.119	None	1.119	24.0*	33.6*	33.9*	34.2	34.8	36.0	37.1	37.7
7	1	1.119	1	1.135	22.5	32.0	33.2	34.3*	35.8	37.8	40.0	40.8
7	2	1.119	2	1.151	22.2	31.3	32.9	34.2	36.0*	39.7*	43.6*	45.3*
8	3	1.160	None	1.160	35.0*	43.2*	43.8*	44.5*	45.3	46.0	46.8	47.7
8	1	1.160	1	1.176	34.3	42.0	43.2	44.4	45.5*	48.7	51.2	52.4
8	2	1.160	2	1.192	33.2	41.3	42.8	43.8	45.4	50.8*	55.5*	58.2*

* = Indicates maximum time at indicated volts for each experiment

APPENDIX 7: Data Related to

Inspection of Discarded Batteries

Turned in for Purchase of New Batteries

APPENDIX 7

Data on "turned in" batteries inspected
February 18, 1952

Open-circuit voltage			Specific gravity			Stabber voltag		
1	2	3	1	2	3	1	2	3
1.98	1.98	1.93	1.175	1.115	1.140	1.2	1.1	0.7
2.07	2.07	2.07	1.225	1.210	1.200	1.5	1.4	1.5
2.05	2.10	2.07	1.235	1.250	1.230	1.35	1.5	1.4
1.95	1.92	1.92	- - -	- - -	- - -	1.0	0.8	1.0
1.87	1.84	1.85	1.040	1.040	1.040	1.3	1.1	1.2
2.14	2.10	2.12	1.205	1.240	1.260	1.6	1.6	1.6
2.00	2.05	2.05	1.165	1.235	1.250	1.5	1.45	1.5
1.50	2.07	2.02	1.190	1.250	1.215	0.0	1.50	1.2
2.00	2.00	2.00	1.225	1.220	1.190	1.2	1.25	1.3
2.05	1.50	2.00	1.220	1.175	1.200	1.5	0.0	1.4
1.00	2.05	2.05	1.110	1.260	1.245	0.0	1.5	1.8
1.40	2.00	1.40	- - -	- - -	- - -	0.0	1.3	0.0
2.00	2.05	2.05	1.200	1.215	1.220	1.2	1.1	1.0
2.14	2.15	2.13	1.230	1.240	1.225	1.2	1.4	1.2
1.92	1.97	2.02	1.120	1.150	1.185	1.1	1.15	1.40
2.00	2.00	2.05	1.180	1.180	1.205	1.3	1.4	1.4
1.95	2.05	2.07	1.175	1.135	1.195	1.0	1.0	1.4
1.94	1.92	2.00	- - -	1.125	- - -	1.0	1.0	1.3
2.10	2.10	2.05	- - -	- - -	- - -	0.04	1.1	1.3
2.00	2.03	1.50	- - -	- - -	- - -	1.20	1.0	0.02
2.00	1.95	1.97	1.180	1.160	- - -	1.2	0.03	1.3
1.95	1.95	1.95	1.120	1.120	1.125	1.5	1.5	1.5
0.62	1.82	1.89	- - -	- - -	- - -	0.0	0.06	1.05
2.08	2.05	2.02	1.250	1.260	1.210	1.4	1.3	1.45
1.95	1.95	1.97	1.110	1.110	1.125	1.2	1.3	1.3
2.05	2.05	2.00	1.270	1.215	1.175	1.2	1.4	0.6
1.95	1.95	1.95	1.125	1.120	1.125	1.0	1.0	1.0
2.00	2.05	2.05	1.190	1.250	1.230	0.6	1.35	1.3
1.98	2.05	2.05	- - -	1.235	1.225	1.3	1.3	1.5
1.90	1.90	1.88	1.075	1.075	1.075	1.0	1.1	0.7

30 Batteries:

14 Suitable (G)
11 Unsuitable (X)
5 Doubtful (D)

APPENDIX 7 (Sheet 2)

Data on "turned-in" batteries inspected February 26, 1952

Open-circuit voltage			Specific gravity			Stabber voltage			
1	2	3	1	2	3	1	2	3	
1.80	2.20	2.20	1.050	1.210	1.210	0.02	1.4	1.3	X
1.98	2.02	2.00	1.160	1.190	1.175	1.0	1.4	1.2	D
2.05	2.00	1.98	1.225	1.215	1.210	1.3	1.2	1.25	G
2.10	2.05	2.05	1.270	1.235	1.245	1.3	1.3	1.2	G
1.95	1.95	1.45	1.125	1.150	1.140	0.05	1.2	0.05	X
0.40	0.10	1.00	- - -	- - -	- - -	0.0	0.0	0.0	X
2.05	2.05	2.02	1.225	1.225	- - -	0.7	1.3	1.2	D
1.95	1.95	1.95	1.145	1.150	1.145	1.1	1.15	1.1	G
1.95	2.15	2.10	- - -	1.250	1.260	1.0	1.40	1.25	D
2.05	2.05	2.05	1.250	1.250	1.250	1.3	1.35	1.3	G
1.95	1.95	1.95	1.150	1.150	- - -	1.2	1.35	1.25	G
1.95	2.10	2.10	1.160	1.260	1.260	1.0	1.30	1.30	D
2.05	2.00	2.00	1.190	1.160	1.190	1.25	1.20	1.20	D
2.08	2.10	2.00	1.240	1.250	1.180	1.3	1.3	1.2	D
2.00	2.00	2.00	1.170	1.160	1.145	1.1	1.3	1.15	G
2.00	2.00	2.00	1.190	1.190	1.195	1.0	0.8	1.0	D
2.10	2.08	2.05	1.275	1.275	1.255	1.3	1.3	1.3	G
1.95	1.95	1.90	1.125	1.075	- - -	1.3	1.1	1.2	D
0.00	0.00	0.75	- - -	- - -	- - -	0.0	0.0	0.0	X
2.20	2.20	2.20	- - -	- - -	- - -	1.0	1.1	1.0	D
2.00	2.05	2.05	1.185	1.125	1.220	1.0	0.0	1.1	X
2.10	2.00	1.90	1.280	1.200	- - -	1.4	1.3	1.0	D
2.05	2.05	2.08	1.220	1.250	1.240	0.8	1.4	1.3	D
2.15	2.15	1.90	1.290	1.290	1.060	1.5	1.45	1.25	D
1.96	2.00	2.00	- - -	- - -	- - -	0.6	1.25	1.00	X
2.00	1.95	0.00	- - -	- - -	- - -	1.1	1.0	0.0	X
2.05	2.05	2.05	1.260	1.255	1.260	1.4	1.3	1.4	G
1.95	1.95	1.95	1.130	1.130	1.150	1.2	1.0	1.3	G
2.20	1.95	2.02	1.265	- - -	1.190	1.4	1.3	1.25	D
2.05	2.05	2.02	1.200	1.200	1.200	1.3	1.3	1.25	G
1.95	1.95	2.00	1.155	1.150	1.175	1.3	1.2	1.4	G
1.95	1.98	1.95	1.170	1.170	1.140	1.0	1.15	0.6	X
1.90	1.95	1.95	1.17)	1.100	1.120	1.7	0.6	1.0	X
2.00	1.95	2.00	1.170	1.150	1.150	1.35	1.2	1.25	G
2.08	2.05	2.05	1.210	1.210	1.210	1.5	1.4	1.5	G
1.85	1.85	1.50	- - -	- - -	- - -	0.6	0.9	0.0	X
1.95	1.95	1.95	1.100	1.105	1.110	1.0	1.0	1.1	G
2.00	2.00	2.00	1.155	1.175	- - -	0.5	0.0	1.2	X

38 Batteries: 14 Suitable (G), 11 Unsuitable (X), 13 Doubtful (D)

Data on "turned-in" batteries inspected March 3, 1952

Open-circuit voltage			Specific gravity			Stabber voltage			
.1	.2	.3	.1	.2	.3	.1	.2	.3	
1.94	1.92	1.93	1.140	1.130	1.140	1.05	1.10	1.10	G
0.15	0.15	2.00	- - -	- - -	- - -	0.0	0.0	1.3	X
2.05	2.05	2.05	low	low	low	1.25	1.2	1.3	G
1.90	1.90	1.90	1.110	1.120	1.110	0.9	1.1	0.9	D
1.46	1.43	1.95	- - -	- - -	- - -	0.05	0.15	1.2	X
2.00	2.00	2.00	1.180	1.180	1.170	1.3	1.4	1.3	G
2.00	1.95	0.00	1.190	1.150	- - -	1.3	1.3	0.0	X
2.00	2.00	0.40	1.225	1.225	- - -	1.3	1.3	0.0	X
2.25	2.25	1.90	1.275	1.280	1.040	1.6	1.5	1.1	D
1.60	2.15	2.02	- - -	- - -	1.225	0.0	0.9	1.1	X
1.87	1.87	1.87	1.060	1.060	1.060	1.0	1.0	0.9	D
2.05	2.02	0.75	low	1.220	low	1.5	1.25	0.70	X
2.00	1.25	1.25	1.215	1.150	1.110	1.3	0.00	0.0	X
2.00	1.95	1.95	low	low	1.170	1.25	1.30	1.25	G
1.98	1.98	1.98	1.185	1.200	1.185	1.0	1.15	1.3	G
2.05	1.50	2.02	1.250	1.205	1.225	1.3	0.0	1.3	X
2.00	2.00	2.00	1.210	1.200	1.200	1.2	0.4	1.2	X
2.05	2.05	2.05	low	low	1.200	1.1	0.3	1.2	X
2.05	2.05	2.05	1.200	1.200	1.200	1.3	1.3	1.3	G
1.45	2.05	2.05	1.150	- - -	- - -	0.3	1.3	1.5	X
2.10	2.00	2.05	1.255	1.225	1.225	1.4	1.2	1.4	G
1.40	1.95	1.95	low	low	low	0.2	1.2	1.2	X
1.95	1.95	1.98	1.185	low	1.195	1.2	1.0	1.45	G
1.55	2.05	2.00	low	1.260	1.210	0.0	1.3	1.35	X
1.55	1.98	1.95	1.170	1.170	1.170	0.1	1.1	0.5	X
1.95	1.95	1.95	1.160	1.160	1.180	1.0	1.1	1.2	G
1.95	1.95	1.95	low	low	low	1.2	1.15	1.25	G
2.00	2.00	2.00	1.200	1.200	1.200	1.35	1.30	1.40	G
2.08	2.08	2.07	1.275	1.275	1.265	0.7	1.05	1.25	D
0.10	0.05	1.80	- - -	1.100	1.050	0.0	0.0	1.0	X
2.05	0.20	1.95	1.200	1.160	1.175	1.35	0.0	1.3	X
1.92	1.92	1.92	1.110	1.125	1.105	1.0	1.1	1.0	G
2.06	2.02	2.02	1.220	1.215	1.215	1.4	1.5	1.4	G
2.00	2.00	2.00	1.200	1.190	1.190	1.25	1.3	1.2	G
2.25	2.24	2.24	1.230	1.230	1.240	1.5	1.5	1.5	G
2.15	2.12	2.15	1.225	1.235	1.250	1.4	1.4	1.4	G
1.95	1.95	1.98	1.160	1.150	1.180	1.3	1.25	1.4	G
1.80	1.80	1.95	- - -	- - -	1.040	1.8	1.7	0.0	X
1.95	1.90	1.90	- - -	- - -	- - -	1.25	1.45	1.15	G
1.95	1.95	1.95	1.140	1.150	1.150	0.3	1.2	1.15	X
0.70	1.00	1.00	- - -	- - -	- - -	0.0	0.0	0.0	X
1.95	2.00	2.00	- - -	1.175	1.150	0.0	1.2	1.3	X
2.00	2.05	2.02	1.200	1.235	1.225	1.2	1.4	1.3	G

43 Batteries: 19 Suitable (G), 20 Unsuitable (X), 4 Doubtful (D)

APPENDIX 7 (Sheet 4)

Data on "turned-in" batteries inspected March 10, 1952

Open-circuit voltage			Specific gravity			Stabber voltage			
1	2	3	1	2	3	1	2	3	
0.60	0.20	2.00	- - -	- - -	- - -	0.0	0.0	1.3	X
1.00	1.00	1.00	- - -	- - -	- - -	0.0	0.0	0.0	X
2.00	2.00	2.00	low	low	1.220	1.0	1.3	1.4	G
2.00	2.00	2.00	1.190	1.180	1.185	1.4	- -	1.4	G
2.00	2.00	2.05	1.190	1.190	1.195	1.4	- -	1.4	G
2.00	1.70	2.00	1.200	1.165	1.200	1.4	- -	1.2	D
2.05	2.00	2.05	1.220	1.200	1.210	1.4	1.1	1.2	G
1.95	2.00	1.95	1.160	1.200	1.140	0.5	0.0	1.2	X
2.05	2.00	2.05	1.225	1.195	1.200	1.3	1.2	1.0	G
1.80	1.70	1.30	low	low	low	0.3	0.1	0.1	X
2.00	2.00	2.00	1.200	1.220	1.225	1.2	1.2	1.2	G
2.05	2.05	2.00	1.210	1.200	low	1.2	1.4	1.3	G
1.80	1.90	1.90	1.040	1.050	1.075	0.8	0.0	1.3	X
2.05	0.70	2.05	1.250	1.130	1.150	1.4	0.0	1.3	X
2.00	1.60	2.00	1.200	low	low	1.2	0.1	0.2	X
1.95	1.95	1.95	1.120	1.100	1.100	0.9	0.7	0.9	D
2.05	2.00	2.05	1.235	1.185	1.220	1.3	0.3	1.3	X
1.70	1.95	0.95	1.040	1.160	1.030	0.2	1.3	0.0	X
2.00	2.05	2.05	1.185	1.200	1.200	1.0	1.4	1.3	G
2.00	1.85	2.00	1.160	1.160	1.200	1.0	0.1	1.2	X
1.95	2.00	1.95	1.160	1.180	1.150	1.0	1.2	0.8	D
1.90	1.90	1.90	1.125	1.100	1.100	0.0	0.05	1.0	X
2.05	2.10	2.15	1.235	1.175	1.225	1.4	1.4	1.4	G
1.95	1.90	1.95	1.090	1.050	1.070	1.0	1.1	1.0	G
0.00	0.00	0.92	- - -	- - -	- - -	0.0	0.0	0.0	X
0.50	1.95	2.05	1.200	1.150	1.225	0.0	1.3	1.4	X
1.96	2.00	1.96	1.150	1.175	1.155	1.2	1.4	1.3	G
2.03	2.02	2.05	1.200	1.200	low	1.4	1.3	1.2	G
2.05	2.05	2.10	1.150	1.170	1.250	1.2	1.4	1.3	D
2.00	1.95	1.95	1.175	1.170	1.160	1.0	1.0	0.8	D
2.00	2.00	2.00	1.180	1.165	1.175	1.2	1.4	1.4	G
0.02	0.50	0.75	- - -	- - -	- - -	0.0	0.0	0.0	X
2.00	2.00	2.00	1.180	1.225	1.200	1.2	- -	1.3	D
2.05	2.05	1.45	low	low	low	1.3	- -	0.0	X
1.95	1.95	1.96	1.180	1.155	1.200	1.2	1.2	1.3	D

(SEE NEXT PAGE)

2.05	2.00	2.00	1.200	1.200	1.200	1.3	1.4	1.3	G
0.15	0.20	0.18	1.150	1.110	1.090	0.0	0.0	0.0	X
1.40	1.95	2.00	1.125	1.175	1.200	0.0	1.3	1.3	X
2.00	2.00	2.05	1.200	1.260	1.240	1.3	0.05	1.4	X
1.95	1.95	1.95	1.110	1.170	1.165	1.4	1.30	1.4	D
2.00	2.00	2.00	low	low	low	1.0	1.0	0.5	X
2.00	1.50	2.00	- - -	- - -	1.125	0.0	0.0	1.0	X
0.10	0.10	1.90	1.170	1.180	1.185	0.0	0.0	0.5	X
2.05	1.95	2.05	1.225	1.160	1.210	1.4	1.0	1.3	D
2.05	2.05	2.05	low	low	1.240	1.3	0.8	1.4	D
1.95	2.10	2.10	1.090	1.265	low	1.1	1.5	1.4	D
2.00	2.00	2.00	1.190	1.180	1.190	0.9	1.3	1.3	D
2.00	2.00	2.00	1.175	1.150	1.175	0.3	- -	1.1	X

48 Batteries: 14 Suitable (G)
22 Unsuitable (X)
12 Doubtful (D)

APPENDIX 7 (Sheet 6) Data on "turned-in" batteries inspected
May 19, 1952

Open-circuit voltage			Specific gravity			Stabber voltage			
1	2	3	1	2	3	1	2	3	
2.00	2.00	1.98	1.165	1.180	1.160	1.5	1.5	1.5	G
2.15	2.10	2.15	1.210	1.190	1.200	1.5	1.4	1.3	G
2.07	2.07	2.08	1.185	1.175	1.200	1.5	1.4	1.5	G
1.88	2.22	1.98	- - -	1.280	1.125	1.0	1.5	1.4	D
1.98	1.93	1.90	- - -	- - -	- - -	1.0	0.8	1.3	D
1.98	1.97	2.00	1.180	1.175	1.195	1.4	1.3	1.4	G
2.12	2.05	2.08	1.265	- - -	1.240	1.5	1.5	1.5	G
2.07	2.08	2.08	1.225	1.215	1.205	1.4	1.4	1.4	G
2.10	2.12	2.11	1.185	1.225	1.190	1.2	1.4	1.2	G
1.98	1.97	1.97	1.180	1.175	1.175	1.2	1.1	1.0	G
2.02	2.04	1.85	1.190	1.215	- - -	1.5	1.5	1.0	D
1.97	1.97	1.97	1.170	1.170	1.160	1.4	1.4	1.35	G
2.07	2.07	2.00	- - -	1.225	1.165	1.5	1.5	1.0	D
1.95	1.93	1.95	1.165	1.165	1.165	1.1	0.9	1.1	D
1.90	1.87	1.88	1.075	- - -	- - -	1.1	1.1	1.1	G
1.90	1.90	1.90	1.105	1.115	1.100	0.0	1.0	0.2	X
1.82	1.96	2.00	- - -	1.170	1.200	0.7	1.4	1.5	X
2.08	1.20	2.08	1.275	- - -	1.260	1.45	0.0	1.45	X
2.03	1.80	2.05	1.230	- - -	1.250	1.2	0.9	1.4	X
1.95	1.95	1.95	1.145	1.140	1.140	1.2	1.3	1.3	G
1.93	1.98	2.00	1.115	1.150	1.165	1.1	1.4	1.4	D
2.06	2.06	2.07	1.255	1.255	1.260	1.45	1.45	1.45	G
2.06	0.50	2.04	1.270	1.195	1.235	1.45	0.0	1.5	X
2.05	2.05	2.00	1.220	1.235	- - -	1.45	1.5	1.0	D
1.95	1.95	1.95	1.185	1.150	1.180	1.3	1.3	1.4	G

25 Batteries:
13 Suitable (G)
5 Unsuitable (X)
7 Doubtful (D)

Note: 4 others were discarded as mechanically unsound; no data taken on them.

THE NATIONAL BUREAU OF STANDARDS

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