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DEPARTMENT OF THE NAVY
NAVAL AMMUNITION DEPOT
CRANE, INDIANA 47522

IN REPLY REFER TO:
QEWE-LAG:bc
8900
19 SEP 1969

From: Commanding Officer, Naval Ammunition Depot, Crane, Indiana
To: National Aeronautics and Space Administration, Goddard Space Flight Center (Code 716.2, Mr. T. J. Hennigan), Greenbelt, Maryland 20771

Subj: Monthly Progress Report on National Aeronautics and Space Administration Space Cell Test Program (4 copies)

Ref: (a) NASA Purchase Order W12-397 of 19 January 1967 to NAD Crane

Encl: (1) Explanation of Data
(2) Information on Active Tests as of 31 August 1969
(3) Information on Completed Tests as of 31 August 1969
(4) Data Available

1. The monthly status report of the Spacecraft Cell Testing program being done at NAD Crane for the National Aeronautics and Space Administration, under the direction of Goddard Space Flight Center, is submitted in accordance with reference (a). This status report lists the types of cells on test and their test parameters; and includes those cells which have completed tests.

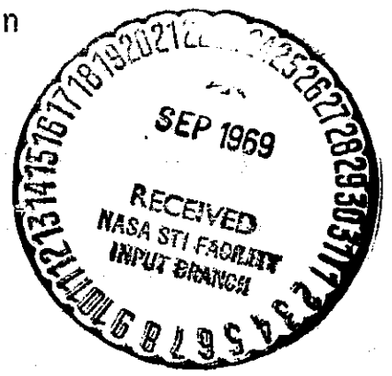
2. Enclosure (1) is an explanation of the symbolic names used for the information on each pack listed in enclosures (2) and (3).

3. Enclosure (2) contains information on current tests; and enclosure (3) contains that on cells which have completed tests.

4. Data available in the form of printed lines, punched cards, or magnetic tape is listed in enclosure (4).

C. G. LYNCH
By direction

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EXPLANATION OF DATA

1. An explanation of the symbolic names used on line one of enclosures (2) and (3) follows:

a. TYPE: This stands for the type of cells in the pack. The following is a list of the symbols for the various types of cells.

(1) AGCD: Silver-Cadmium Cells.

(2) AGZN: Silver-Zinc Cells.

(3) NICD: Nickel-Cadmium Cells.

(4) PBCA: Lead-Calcium Cells.

(5) PBH+: Lead-Acid Cells.

b. AMPHR: This stands for the ampere-hour capacity of the individual cells as rated by the manufacturer. Cells tested in this program have ranged in rated capacity from 1.25 to 50 ampere-hours.

c. PEROD: This is the total time (in hours) for one charge-discharge period during automatic cycling. The various cycle periods are listed below with the corresponding charge and discharge times.

Cycle Period	Charge Time	Discharge Time
1.5 hr.	1.0 hr.	0.5 hr.
3.0 hr.	2.5 hr.	0.5 hr.
8.0 hr.	7.0 hr.	1.0 hr.
24.0 hr.	23.0 hr.	1.0 hr.

d. DEPTH: This is the depth of discharge. The depth of discharge is given as a percentage of the manufacturer's rated ampere-hour capacity to be removed during discharge. The depths of discharge at which cells are presently being cycled range from 10 to 75 percent.

e. TEMP: This is the ambient temperature at which the cells undergo automatic cycling. The various ambient temperatures at which cells are currently cycling are -20°, 0°, 20°, 25° and 40° C.

f. MANFR: This stands for the manufacturer of the cells. The manufacturer is represented by one of the following symbols:

(1) CD: C&D Batteries.

(2) DL: Delco-Remy.

(3) ESB: ESB, Incorporated.

(4) GE: General Electric.

(5) GO: Gould-National Batteries, Inc.

(6) GU: Gulton Industries, Inc.

(7) MD: McDonnel Douglas (Astropower).

(8) NF: NIFE, Jungner of Sweden.

(9) SO: Sonotone Corporation.

(10) YD: Yardney Electric Corporation.

g. SPSYM: This stands for special symbol. These symbols are used to describe special types of cells. They also indicate new charge control methods and devices used during automatic cycling.

(1) AE: Auxiliary electrode cells.

(2) AE-GE: General Electric type.

(3) AE-GU: Gulton type.

(4) AE-RE: Auxiliary electrode and recombination electrode.

(5) AE13: General Electric type AB13.

(6) AE14: General Electric type AB14.

(7) CC: Commercial cells.

(8) CHSP: "Chemsorb" separator.

(9) CLM: Coulometer in series with cells to effect charge control.

(10) CPSP: Cellophane separator.

(11) C3SP: C3 separator.

(12) FRS: Folded seal, same type of seal as RS below.

(13) HSAD: Hermetically sealed adhydrode.

(14) IM: Cells with improved material and methods used in construction.

(15) IPD: Cells containing an internal pressure device.

(16) NB: NIMBUS cells.

(17) NBPT: NIMBUS cells with pressure transducers.

(18) PLSP: Pellon separator.

(19) PS: Polymerized neoprene terminal to cover seal.

(20) PT: Pressure transducer.

(21) RCPSP: Radiated cellophane separator.

(22) RS: Vulcanized neoprene terminal to cover seal.

(23) ST: Stabistors used for charge control of cells.

(24) WNSP: Woven nylon separator.

(25) 2SR: Two-step regulator used for charge control of cells.

(26) 3S: Triple seal between terminals and cover (ceramic between glass).

h. PACK: This stands for pack identification number. The numeric part of the number was assigned arbitrarily and is for convenient identification of the pack. The alphabetic character indicates the chronological order in which the packs were run. That is, pack 1A completed automatic cycling prior to starting pack 1B.

i. PRCHG: This represents the percent recharge. It is the charge following discharge, and is given as a percentage of the ampere-hours removed on the previous discharge. The percent recharge will range from 100 to 200 percent.

j. CHGCU: This represents the specified charging current in amperes.

k. DISCU: This represents the specified discharging current in amperes.

l. VOLIM: This is the specified per cell on charge voltage limit. Cells on test are connected in electrical series. The average cell voltage must not exceed this value during charging. The value is given in volts. Not all batteries on test have a per cell voltage limit. However, for those that do, the voltage limits will range from 1.45 to 1.60 volts per cell for nickel-cadmium cells; and from 1.97 to 2.05 volts per cell for silver-zinc cells.

m. NUMCP: This is the total number of cells connected in electrical series initially to form the pack.

n. STARTED: This is the date the pack was put on automatic cycling.

o. CYCLES: This is the number of charge-discharge cycles completed as of the end of the month by the active packs listed in enclosure (2). On the inactive packs, enclosure (3), this is the total number of charge-discharge cycles completed at the time the pack was removed from automatic cycling.

p. CELLS: This is the total number of cells still on automatic cycling at the end of the month.

q. FAILURES: This gives the total number of cells failed during the month.

r. COMPLETED: This is the date the pack was removed from automatic cycling.

INFORMATION ACTIVE TESTS

TYPE	AMPHR	PEROD	DEPTH	TEMP	MANFR	SPSYM	PACK	PRCHG	CHGCU	DISCU	VOLIM	NUMCP
AGCD	11.00	24.0	18	00	YD	AE-GU	057D		0.25	2.00	1.51	5
AGCD	8.00	8.0	25	25	ESB	AE	001B	175	0.50	2.00	1.51	5
AGCD	5.00	24.0	20	00	YD	NONE	113B	NONE	0.30	1.00	1.50	5
NICD	20.00	3.0	40	25	SO	IPD	046A		20.00	16.00	1.50	10
NICD	20.00	1.5	25	25	SO	IPD	010A	140	7.00	10.00	1.49	10
NICD	20.00	1.5	25	25	SO	IPD	022A		20.00	10.00	1.50	10
NICD	20.00	1.5	15	25	GU	AE	019B		8.00	6.00		5
NICD	20.00	1.5	15	00	GU	AE	054B		8.00	6.00		5
NICD	20.00	1.5	25	0/4	GU	MULTI	048C		10.00	10.00		6
NICD	12.00	3.0	25	00	GE	NONE	125A	115	1.38	6.00	1.55	5
NICD	12.00	3.0	15	00	GE	NONE	111A	115	0.83	3.60	1.55	5
NICD	12.00	1.5	40	00	GU	AE	071B	NONE	6.00	9.60	NONE	5
NICD	12.00	1.5	25	00	GU	AE	070A	NONE	6.00	6.00	NONE	5
NICD	12.00	1.5	25	00	GU	NONE	101B	115	3.45	6.00	1.55	5
NICD	12.00	1.5	25	00	GE	NONE	124A	115	3.45	6.00	1.55	5
NICD	12.00	1.5	15	00	GU	NONE	016B	115	2.07	3.60	1.55	5
NICD	12.00	1.5	15	00	GE	NONE	110A	115	2.07	3.60	1.55	5
NICD	6.00	1.5	25	25	GE	AE	005B		3.00	3.00		5
NICD	6.00	1.5	25	40	GE	AE	006C		3.00	3.00		5
NICD	6.00	1.5	25	40	GE	AE	042C		3.00	3.00		5
NICD	6.00	3.0	25	40	GU	CLM	029B	NONE	3.00	3.00	NONE	5
NICD	6.00	1.5		20	GU		051B		0.30	0.10		10
NICD	6.00	1.5	25	25	GE	AE	017B		3.00	3.00		5
NICD	6.00	3.0	25	25	GU	CLM	018C	NONE	3.00	3.00	NONE	5
NICD	6.00	1.5	15	25	GE	AE	028C		1.80	1.80		5
NICD	6.00	3.0	25	-20	GU	CLM	041B	NONE	3.00	3.00	NONE	5

FOLDOUT FRAME

INFORMATION ACTIVE TESTS

SYM	PACK	PRCHG	CHGCU	DISCU	VOLIM	NUMCP	STARTED	CYCLES	CELLS	FAILURES
-GU	057D		0.25	2.00	1.51	5	2-14-68	546	4	0
	001B	175	0.50	2.00	1.51	5	9- 9-66	3106	4	0
NE	113B	NONE	0.30	1.00	1.50	5	1-22-67	946	5	0
D	046A		20.00	16.00	1.50	10	9-20-67	3247	2	0
D	010A	140	7.00	10.00	1.49	10	9-20-67	6683	10	0
D	022A		20.00	10.00	1.50	10	9-20-67	6159	1	0
	019B		8.00	6.00		5	3-23-68	8368	5	0
	054B		8.00	6.00		5	3-23-68	8357	5	0
LTI	048C		10.00	10.00		6	5-26-69	749	6	0
NE	125A	115	1.38	6.00	1.55	5	1- 4-64	15776	5	0
NE	111A	115	0.83	3.60	1.55	5	1- 4-64	15606	5	0
	071B	NONE	6.00	9.60	NONE	5	1- 6-67	14753	4	0
	070A	NONE	6.00	6.00	NONE	5	2-10-67	14439	5	0
NE	101B	11	3.45	6.00	1.55	5	12-19-64	26260	4	0
NE	124A	115	3.45	6.00	1.55	5	1- 4-64	31108	3	0
NE	016B	115	2.07	3.60	1.55	5	2-20-65	25395	5	0
NE	110A	115	2.07	3.60	1.55	5	1- 4-64	30485	5	0
	005B		3.00	3.00		5	5-20-68	6548	5	0
	006C		3.00	3.00		5	6- 6-68	7142	5	0
	042C		3.00	3.00		5	5-20-68	7399	5	0
M	029B	NONE	3.00	3.00	NONE	5	11-18-66	7806	5	0
	051B		0.30	0.10		10	2-27-69	2890	10	0
	017B		3.00	3.00		5	5-20-68	7432	5	0
M	018C	NONE	3.00	3.00	NONE	5	11-18-66	7471	4	0
	028C		1.80	1.80		5	7-18-68	6519	4	0
M	041B	NONE	3.00	3.00	NONE	5	11-18-66	7499	4	0

FOLDOUT FRAME

Enclosure (2)

INFORMATION ACTIVE TESTS

TYPE	AMPHR	PEROD	DEPTH	TEMP	MANFR	SPSYM	PACK	PRCHG	CHGCU	DISCU	VOLIM	NUMCP	ST
NICD	6.00	3.0	25	00	GU	CLM	066B	NONE	3.00	3.00	NONE	5	11-
NICD	6.00	1.5	25	*	GU	AE	024C	NA	3.00	3.00	NONE	5	4-
NICD	6.00	1.5	25	*	GU	HSAD	058D		3.00	3.00		5	1-
NICD	6.00	1.5	25	00	GU	IM	013B	115	1.73	3.00	1.55	5	2-
NICD	6.00	1.5	25	00	GE	AE	052C		3.00	3.00		5	6-
NICD	6.00	1.5	25	00	GE	AE	050B		3.00	3.00		5	5-
NICD	6.00	1.5	15	00	GE	AE	053B		1.80	1.80		5	7-
NICD	6.00	1.5	15	*	GU	AE	060B	NA	1.80	1.80	NONE	5	4-
NICD	6.00	1.5	15	*	GU	HSAD	036D		1.80	1.80		5	1-
NICD	6.00	1.5	10	00	GU	NONE	061B	110	0.66	1.20	1.55	10	6-
NICD	6.00	1.5	25	*	GE	AE	062B		3.00	3.00		5	7-
NICD	6.00	1.5	25	*	GE	AE	065B		3.00	3.00		5	7-
NICD	5.60	1.5	25	-20	GU	FRS	044B	115	1.61	2.80	1.60	5	1-
NICD	5.60	1.5	25	-20	GU	RS	032B	115	1.61	2.80	1.60	5	1-
NICD	5.60	1.5	25	00	GU	RS	090C	115	1.61	2.80	1.55	5	12-
NICD	5.60	1.5	25	00	GU	FRS	100B	115	1.61	2.80	1.55	5	12-
NICD	5.00	1.5	25	00	GE	NBPT	107A	110	1.38	2.50	1.49	5	6-
NICD	5.00	1.5	15	25	GE	NB	106A	120	0.90	1.50	1.49	5	4-
NICD	5.00	1.5	15	25	GU	NB	120A	120	0.90	1.50	1.49	5	5-
NICD	5.00	1.5	15	00	GE	NB	103A	110	0.83	1.50	1.49	5	4-
NICD	5.00	1.5	15	00	GU	NB	117A	110	0.83	1.50	1.49	5	5-
NICD	4.00	1.5	25	25	GU	CC	004B	125	1.25	2.00	1.49	5	8-
NICD	4.00	1.5	25	00	GU	CC	126B	115	1.15	2.00	1.55	5	7-
NICD	4.00	1.5	15	00	GU	CC	115B	115	0.69	1.20	1.55	5	7-
NICD	3.90	1.5	25	00	NIFE	NONE	097C	107	1.07	2.00	1.50	5	9-
NICD	3.50	1.5	40	-20	GU	PS	075D	110	1.54	2.80	1.56	5	12-

FOLDOUT FRAME

NFORMATION ACTIVE TESTS

YM	PACK	PRCNG	CHGCU	DISCU	VOLIM	NUMCP	STARTED	CYCLES	CELLS	FAILURES
	066B	NONE	3.00	3.00	NONE	5	11-18-66	7900	5	0
	024C	NA	3.00	3.00	NONE	5	4-25-67	13605	5	0
D	058D		3.00	3.00		5	1-11-69	3723	5	0
	013B	115	1.73	3.00	1.55	5	2-22-65	25553	4	0
	052C		3.00	3.00		5	6- 6-68	7148	5	0
	050B		3.00	3.00		5	5-20-68	7409	5	0
	053B		1.80	1.80		5	7-19-68	6430	4	0
	060B	NA	1.80	1.80	NONE	5	4-25-67	13624	5	0
D	036D		1.80	1.80		5	1-11-69	3726	5	0
E	061B	110	0.66	1.20	1.55	10	6- 7-67	12615	10	0
	062B		3.00	3.00		5	7- 4-68	2316	5	0
	065B		3.00	3.00		5	7- 4-68	6619	5	0
	044B	115	1.61	2.80	1.60	5	1- 2-66	20529	4	0
	032B	115	1.61	2.80	1.60	5	1- 2-66	20417	3	0
	090C	115	1.61	2.80	1.55	5	12-27-65	20831	4	0
	100B	115	1.61	2.80	1.55	5	12-17-65	20746	5	0
T	107A	110	1.38	2.50	1.49	5	6- 5-65	23904	5	0
	106A	120	0.90	1.50	1.49	5	4-24-65	24446	4	0
	120A	120	0.90	1.50	1.49	5	5- 2-65	23114	4	0
	103A	110	0.83	1.50	1.49	5	4-24-65	24510	5	0
	117A	110	0.83	1.50	1.49	5	5- 8-65	24058	5	0
	004B	125	1.25	2.00	1.49	5	8- 4-64	28772	4	0
	126B	115	1.15	2.00	1.55	5	7-25-64	28756	5	0
	115B	115	0.69	1.20	1.55	5	7-25-64	28306	5	0
E	097C	107	1.07	2.00	1.50	5	9-29-67	10936	5	0
	075D	110	1.54	2.80	1.56	5	12-24-66	13837	4	0

FOLDOUT FRAME

INFORMATION ACTIVE TESTS

TYPE	AMPHR	PEROD	DEPTH	TEMP	MANFR	SPSYM	PACK	PRCHG	CHGCU	DISCU	VOLIM	NUMC
NICD	3.50	1.5	40	00	GU	PS	099C	115	1.61	2.80	1.55	5
NICD	3.50	1.5	25	25	GU	PS	087C	125	1.09	1.75	1.49	5
NICD	3.50	1.5	25	-20	GU	PS	089C	110	0.96	1.75	1.56	5
NICD	3.50	1.5	25	00	GU	PS	122C	115	1.01	1.75	1.55	5
NICD	3.50	1.5	10	00	SO	NONE	0158	110	0.39	0.70	1.55	10
NICD	3.00	1.5	25	00	SO	3S	0318	115	0.96	1.50	1.55	5
NICD	3.00	1.5	15	00	SO	3S	043B	115	0.52	0.90	1.55	5
NICD	1.25	1.5	60	-20	GU	NONE	088D	NONE	1.00	0.63	NONE	5
NICD	1.25	1.5	25	-20	GU	NONE	074B	NONE	1.00	0.63	NONE	5
NICD	1.25	1.5	25	00	GU	NONE	108B	NONE	1.25	0.63	NONE	5

FOLDOUT FRAME

INFORMATION ACTIVE TESTS

IANFR	SPSYM	PACK	PRCHG	CHGCU	DISCU	VOLIM	NUMCP	STARTED	CYCLES	CELLS	FAILURES
GU	PS	099C	115	1.61	2.80	1.55	5	12-24-66	15218	5	0
GU	PS	087C	125	1.09	1.75	1.49	5	12-23-66	15212	5	0
GU	PS	089C	110	0.96	1.75	1.56	5	12-24-66	15136	5	0
GU	PS	122C	115	1.01	1.75	1.55	5	12-24-66	22215	5	0
SO	NONE	015B	110	0.39	0.70	1.55	10	6- 7-67	12682	10	0
SO	3S	031B	115	0.96	1.50	1.55	5	6-24-65	22736	4	0
SO	3S	043B	115	0.52	0.90	1.55	5	6-24-65	23059	5	0
GU	NONE	088D	NONE	1.00	0.63	NONE	5	3- 3-66	18774	4	0
GU	NONE	074B	NONE	1.00	0.63	NONE	5	3- 3-66	19383	5	0
GU	NONE	108B	NONE	1.25	0.63	NONE	5	3- 4-66	19688	5	0

FOLDOUT FRAME

FOOTNOTE

* THESE CELLS ARE IN AMBIENT TEMPERATURE, WHICH VARIES SINUSOIDALLY FROM ZERO TO FORTY DEGREES CENTIGRADE WITHIN A PERIOD OF 48 HOURS.

* PACKS 15B AND 61B HAVE RECEIVED 22,900 CYCLES AT 10 PERCENT DEPTH OF DISCHARGE, AND AT -10 DEGREES CENTIGRADE BEFORE CYCLE ONE WAS STARTED AT N.A.D. CRANE

MULTI THESE PACKS CONTAIN TWO CELLS WITH THIRD ELECTRODES, A COULOMETER PRESSURE TRANSDUCERS, AND PRESSURE GAGES

FOLDOUT FRAME

INFORMATION ON COMPLETED TESTS

TYPE	AMPHR	PEROD	DEPTH	TEMP	MANFR	SPSYM	PACK	PRCHG	CHGCU	DISCU	VOLIM	NUMCP	STA
AGCD	12.00	24.0	50	40	YD	NONE	033A	NONE	0.60	6.00	1.50	10	2-1
AGCD	12.00	24.0	43	40	YD	AE-GE	009F	NA	0.50	5.20	1.51	5	6-1
AGCD	12.00	24.0	50	00	YD	NONE	057A	NONE	0.60	6.00	1.50	10	2-1
AGCD	12.00	24.0	43	00	YD	AE-GE	021D	NA	0.50	5.20	1.51	5	6-1
AGCD	12.00	1.5	25	25	YD	NONE	082B	130	3.90	6.00	1.55	5	1-1
AGCD	12.00	1.5	25	-20	YD	NONE	085B	130	3.90	6.00	1.60	5	1-1
AGCD	12.00	1.5	25	00	YD	NONE	097B	130	3.90	6.00	1.58	5	1-1
AGCD	11.00	24.0	40	25	YD	NONE	021B	157	0.30	4.40	1.51	10	11-
AGCD	11.00	24.0	18	25	YD	AE-GU	069B		0.25	2.00	1.51	5	2-1
AGCD	11.00	24.0	40	00	YD	NONE	045B	157	0.30	4.40	1.51	10	11-
AGCD	11.00	8.0	27	25	YD	PLSP	021C	117	0.50	3.00	1.51	5	3-2
AGCD	11.00	8.0	27	25	YD	WNSP	045C	117	0.50	3.00	1.51	5	3-2
AGCD	11.00	24.0	18	40	YD	AE-GU	033C		0.25	2.00	1.51	5	2-1
AGCD	10.00	8.0	30	25	YD	NONE	045D	117	0.50	3.00	1.51	5	5-
AGCD	5.00	24.0	20	40	YD	C3SP	045A	NONE	0.30	1.00	1.50	5	9-2
AGCD	5.00	24.0	20	40	YD	NONE	128B	NONE	0.30	1.00	1.50	5	1-1
AGCD	5.00	24.0	20	25	YD	RCPSP	009C	NONE	1.00	10.00	1.97	10	10-2
AGCD	5.00	24.0	20	25	YD	C3SP	021A	NONE	0.30	1.00	1.50	5	9-1
AGCD	5.00	24.0	20	25	YD	CPSP	033B	NONE	0.30	1.00	1.49	5	10-1
AGCD	5.00	24.0	20	25	YD	PLSP	069A	NONE	0.30	1.00	1.50	5	10-2
AGCD	5.00	24.0	20	25	YD	NONE	105B	NONE	0.30	1.00	1.50	5	1-1
AGCD	5.00	24.0	20	25	YD	NONE	077B	NONE	0.30	1.00	1.50	5	1-1
AGCD	5.00	8.0	20	25	YD	NONE	118C	NONE	0.30	1.00	1.50	5	1-1
AGCD	5.00	24.0	20	00	YD	C3SP	057B	NONE	0.30	1.00	1.50	5	9-1
AGCD	5.00	8.0	20	00	YD	NONE	114B	NONE	0.30	1.00	1.50	5	1-2
AGCD	3.00	1.5	16	25	YD	NONE	002C	260	1.30	1.00	1.52	9	9-1

FOLDOUT FRAME

INFORMATION ON COMPLETED TESTS

PSYM	PACK	PRCHG	CHGCU	DISCU	VOLIM	NUMCP	STARTED	COMPLETED	CYCLES
ONE	033A	NONE	0.60	6.00	1.50	10	2-14-64	9-20-64	210
E-GE	009F	NA	0.50	5.20	1.51	5	6-16-67	5-28-68	310
ONE	057A	NONE	0.60	6.00	1.50	10	2-14-64	9- 3-64	168
E-GE	021D	NA	0.50	5.20	1.51	5	6-16-67	8-14-67	61
ONE	082B	130	3.90	6.00	1.55	5	1-17-66	11-27-66	4559
ONE	085B	130	3.90	6.00	1.60	5	1-19-66	3-25-67	2375
ONE	097B	130	3.90	6.00	1.58	5	1-19-66	3-15-67	4481
ONE	021B	157	0.30	4.40	1.51	10	11- 5-66	1-13-67	69
E-GU	069B		0.25	2.00	1.51	5	2-14-68	7-10-69	507
ONE	045B	157	0.30	4.40	1.51	10	11- 5-66	3-13-67	121
LSP	021C	117	0.50	3.00	1.51	5	3-28-67	4- 9-67	37
NSP	045C	117	0.50	3.00	1.51	5	3-28-67	4-22-67	70
E-GU	033C		0.25	2.00	1.51	5	2-14-68	5-15-69	447
ONE	045D	117	0.50	3.00	1.51	5	5- 3-67	11-21-68	1759
3SP	045A	NONE	0.30	1.00	1.50	5	9-27-65	11-16-65	61
ONE	128B	NONE	0.30	1.00	1.50	5	1-19-67	11- 4-67	269
CPSP	009C	NONE	1.00	10.00	1.97	10	10-27-65	12- 1-65	34
3SP	021A	NONE	0.30	1.00	1.50	5	9-17-65	12-25-65	98
PSP	033B	NONE	0.30	1.00	1.49	5	10-17-65	11- 4-67	720
LSP	069A	NONE	0.30	1.00	1.50	5	10-27-65	7-17-67	610
ONE	105B	NONE	0.30	1.00	1.50	5	1-12-67	4-19-67	77
ONE	077B	NONE	0.30	1.00	1.50	5	1-12-67	11-12-68	661
ONE	118C	NONE	0.30	1.00	1.50	5	1-17-67	7- 3-68	1505
3SP	057B	NONE	0.30	1.00	1.50	5	9-17-65	6-17-66	267
ONE	114B	NONE	0.30	1.00	1.50	5	1-22-68	6-25-68	14966
ONE	002C	260	1.30	1.00	1.52	9	9-16-66	12-12-67	7039

Enclosure (3)

FOLDOUT FRAME

INFORMATION ON COMPLETED TESTS

TYPE	AMPHR	PEROD	DEPTH	TEMP	MANFR	SPSYM	PACK	PRCHG	CHGCU	DISCU	VOLIM	NUMCP	STARTE
AGZN	40.00	24.0	25	25	DL	NONE	075B	NONE	25.00	10.00	1.97	5	10-28-6
AGZN	25.00	24.0	40	25	DL	2SR	009D	NONE	1.00	10.00	1.97	10	12-13-6
AGZN	25.00	24.0	40	25	DL	2SR	009E	NONE	1.00	10.00	1.97	10	10- 5-6
AGZN	25.00	24.0	40	25	DL	NONE	075A	NONE	15.00	10.00	1.97	5	8-18-6
AGZN	25.00	24.0	40	25	DL	NONE	089A	NONE	15.00	10.00	1.97	5	9-18-6
AGZN	25.00	3.0	40	25	DL	NONE	088B	NONE	15.00	20.00	1.97	5	3- 1-6
AGZN	25.00	3.0	40	25	DL	NAOH	088C	NONE	15.00	20.00	1.97	5	3-26-6
AGZN	16.00	24.0	31	25	YD	NONE	057C	230	0.50	5.00	2.00	10	12- 2-6
AGZN	12.00	24.0	42	25	YD	NONE	009A	NONE	0.50	5.00	1.97	10	5- 7-6
NICD	50.00	1.5	25	40	GU	NONE	081A	NONE	14.33	25.00	1.55	5	7- 5-6
NICD	50.00	1.5	25	40	GU	NONE	109A	160	14.33	25.00	1.55	5	7-11-6
NICD	50.00	1.5	25	00	GU	NONE	095A	115	14.38	25.00	1.55	5	6- 8-6
NICD	50.00	1.5	15	40	GU	NONE	123A	160	12.00	15.00	1.45	5	6- 8-6
NICD	20.00	1.5	75	25	SO	IPD	072B		20.00	30.00	1.50	10	9-20-6
NICD	20.00	1.5	40	25	SO	IPD	034B		20.00	16.00	1.50	10	9-20-6
NICD	20.00	3.0	40	25	GO	NONE	119A	125	4.00	16.00	1.49	5	2- 1-6
NICD	20.00	3.0	40	25	GU	NONE	088A	125	4.00	16.00	1.49	5	2- 1-6
NICD	20.00	3.0	25	40	GO	NONE	122A	160	3.20	10.00	1.45	5	1-24-6
NICD	20.00	3.0	25	40	GU	NONE	091A	160	3.20	10.00	1.45	5	1-24-6
NICD	20.00	3.0	25	25	GO	NONE	105A	125	2.50	10.00	1.49	5	1-21-6
NICD	20.00	1.5	25	*	GU	MULTI	036C		10.00	10.00		5	2- 8-6
NICD	20.00	3.0	25	25	GU	NONE	074A	125	2.50	10.00	1.49	5	1-21-6
NICD	20.00	3.0	25	00	GO	NONE	094A	115	2.30	10.00	1.55	5	1-24-6
NICD	20.00	3.0	25	00	GU	NONE	116A	115	2.30	10.00	1.55	5	2-11-6
NICD	20.00	1.5	15	*	GU	MULTI	012D		10.00	6.00		5	2- 8-6
NICD	20.00	3.0	15	40	GO	NONE	108A	160	1.92	6.00	1.45	5	1-24-6

FOLDOUT FRAME

INFORMATION ON COMPLETED TESTS

SYM	PACK	PRCHG	CHGCU	DISCU	VOLIM	NUMCP	STARTED	COMPLETED	CYCLES
NE	075B	NONE	25.00	10.00	1.97	5	10-28-64	3-15-65	139
R	009D	NONE	1.00	10.00	1.97	10	12-13-65	4-18-66	121
R	009E	NONE	1.00	10.00	1.97	10	10- 5-66	1- 4-67	90
NE	075A	NONE	15.00	10.00	1.97	5	8-18-64	9-18-64	32
NE	089A	NONE	15.00	10.00	1.97	5	9-18-64	12- 8-64	80
NE	088B	NONE	15.00	20.00	1.97	5	3- 1-65	3-16-65	120
OH	088C	NONE	15.00	20.00	1.97	5	3-26-65	5- 6-65	325
NE	057C	230	0.50	5.00	2.00	10	12- 2-66	8-30-67	281
NE	009A	NONE	0.50	5.00	1.97	10	5- 7-65	7- 7-65	58
NE	081A	NONE	14.33	25.00	1.55	5	7- 5-64	7-12-65	4
NE	109A	160	14.33	25.00	1.55	5	7-11-64	7-26-64	165
NE	095A	115	14.38	25.00	1.55	5	6- 8-64	2- 9-65	3227
NE	123A	160	12.00	15.00	1.45	5	6- 8-64	11-11-64	1878
D	072B		20.00	30.00	1.50	10	9-20-67	4- 5-69	1143
D	034B		20.00	16.00	1.50	10	9-20-67	7-14-69	5768
NE	119A	125	4.00	16.00	1.49	5	2- 1-64	9-27-64	1793
NE	088A	125	4.00	16.00	1.49	5	2- 1-64	3-21-64	359
NE	122A	160	3.20	10.00	1.45	5	1-24-64	7- 2-64	983
NE	091A	160	3.20	10.00	1.45	5	1-24-64	10-14-65	4480
NE	105A	125	2.50	10.00	1.49	5	1-21-64	3-17-66	5690
LTI	036C		10.00	10.00		5	2- 8-68	8-14-68	966
NE	074A	125	2.50	10.00	1.49	5	1-21-64	9-27-64	1755
NE	094A	115	2.30	10.00	1.55	5	1-24-64	2-13-68	11162
NE	116A	115	2.30	10.00	1.55	5	2-11-64	2-13-68	10971
LTI	012D		10.00	6.00		5	2- 8-68	5-13-69	7262
NE	108A	160	1.92	6.00	1.45	5	1-24-64	8-31-65	4273

FOLDOUT FRAME

INFORMATION ON COMPLETED TESTS

TYPE	AMPHR	PEROD	DEPTH	TEMP	MANFR	SPSYM	PACK	PRCHG	CHGCU	DISCU	VOLIM	NUMCP	STARTE
NICD	20.00	3.0	15	00	GO	NONE	080A	115	1.38	6.00	1.55	5	1-24-6
NICD	20.00	3.0	15	00	GU	NONE	102A	115	1.38	6.00	1.55	5	1-24-6
NICD	20.00	1.5	40	25	GO	NONE	118A	125	10.00	16.00	1.49	5	2- 1-6
NICD	20.00	1.5	40	25	GU	NONE	087A	125	10.00	16.00	1.49	5	2- 1-6
NICD	20.00	1.5	40	*	GU	MULTI	058C		10.00	16.00		5	2- 8-6
NICD	20.00	1.5	25	40	GO	NONE	126A	160	8.00	10.00	1.45	5	1-16-6
NICD	20.00	1.5	25	40	GU	NONE	090A	160	8.00	10.00	1.45	5	1-18-6
NICD	20.00	1.5	25	25	GU	NONE	073A	125	6.25	10.00	1.49	5	1-16-6
NICD	20.00	1.5	25	25	GO	NONE	104A	125	6.25	10.00	1.49	5	1-16-6
NICD	20.00	1.5	25	00	GO	NONE	098A	115	5.75	10.00	1.55	5	1-21-6
NICD	20.00	1.5	25	00	GU	NONE	115A	115	5.75	10.00	1.55	5	1-16-6
NICD	20.00	1.5	15	40	GU	AE	036B	NONE	5.00	6.00	NONE	5	3-11-6
NICD	20.00	1.5	15	40	GU	AE	038E		8.00	6.00		5	3-23-6
NICD	20.00	1.5	15	40	GU	NONE	076A	160	1.92	6.00	1.45	5	1-18-6
NICD	20.00	1.5	15	40	GU	NONE	077A	160	1.92	6.00	1.45	5	1-21-6
NICD	20.00	1.5	15	40	GO	NONE	112A	160	4.80	6.00	1.45	5	1-16-6
NICD	20.00	1.5	15	25	GU	AE	012C	NONE	5.00	6.00	NONE	5	3- 9-6
NICD	20.00	1.5	15	00	GU	AE	058B	NONE	5.00	6.00	NONE	5	4- 8-6
NICD	20.00	1.5	15	00	GO	NONE	084A	115	3.45	6.00	1.55	5	1-16-6
NICD	20.00	1.5	15	00	GU	NONE	101A	115	3.45	6.00	1.55	5	1-16-6
NICD	12.00	24.0	50	25	GE	NONE	093A	115	0.52	6.00	1.45	5	3-28-6
NICD	12.00	3.0	40	25	GE	NONE	097A	125	2.40	9.60	1.49	5	1- 4-6
NICD	12.00	3.0	25	40	GE	NONE	100A	160	1.92	6.00	1.45	5	1- 4-6
NICD	12.00	1.5	25	40	GU	AE	047B	NONE	6.00	6.00	NONE	5	1- 5-6
NICD	12.00	1.5	40	25	GU	AE	011B	NONE	6.00	9.60	NONE	5	10-17-6
NICD	12.00	3.0	15	40	GE	NONE	086A	160	1.15	3.60	1.45	5	12-29-6

*OLDOUT FRAME

INFORMATION ON COMPLETED TESTS

SYM	PACK	PRCHG	CHGCU	DISCU	VOLIM	NUMCP	STARTED	COMPLETED	CYCLES
NE	080A	115	1.38	6.00	1.55	5	1-24-64	2-13-68	11378
NE	102A	115	1.38	6.00	1.55	5	1-24-64	2-13-68	11212
NE	118A	125	10.00	16.00	1.49	5	2- 1-64	9- 7-64	2937
NE	087A	125	10.00	16.00	1.49	5	2- 1-64	4- 7-64	627
LTI	058C		10.00	16.00		5	2- 8-68	3- 2-68	131
NE	126A	160	8.00	10.00	1.45	5	1-16-64	5-23-64	1574
NE	090A	160	8.00	10.00	1.45	5	1-18-64	11-12-64	4045
NE	073A	125	6.25	10.00	1.49	5	1-16-64	6-30-65	7763
NE	104A	125	6.25	10.00	1.49	5	1-16-64	8-20-64	2980
NE	098A	115	5.75	10.00	1.55	5	1-21-64	1-14-66	10641
NE	115A	115	5.75	10.00	1.55	5	1-16-64	6-24-64	2291
	036B	NONE	5.00	6.00	NONE	5	3-11-67	9- 5-67	2740
	039E		8.00	6.00		5	3-23-68	1- 6-69	4520
NE	076A	160	1.92	6.00	1.45	5	1-18-64	10-15-65	9348
NE	077A	160	1.92	6.00	1.45	5	1-21-64	4-20-66	6032
NE	112A	160	4.80	6.00	1.45	5	1-16-64	2-15-65	5213
	012C	NONE	5.00	6.00	NONE	5	3- 9-67	1-25-68	4934
	058B	NONE	5.00	6.00	NONE	5	4- 8-67	1-25-68	4081
NE	084A	115	3.45	6.00	1.55	5	1-16-64	2-13-68	22448
NE	101A	115	3.45	6.00	1.55	5	1-16-64	9-20-64	3631
NE	093A	115	0.52	6.00	1.45	5	3-28-64	4-28-65	349
NE	097A	125	2.40	9.60	1.49	5	1- 4-64	11- 8-65	5002
NE	100A	160	1.92	6.00	1.45	5	1- 4-64	9-24-65	4424
	047B	NONE	6.00	6.00	NONE	5	1- 5-67	6-15-68	6537
	011B	NONE	6.00	9.60	NONE	5	10-17-66	1- 3-69	11903
NE	086A	160	1.15	3.60	1.45	5	12-29-67	1- 4-64	10661

FOLDOUT FRAME

INFORMATION ON COMPLETED TESTS

TYPE	AMPHR	PEROD	DEPTH	TEMP	MANFR	SPSYM	PACK	PRCHG	CHGCU	DISCU	VOLIM	NUMCP	STARTED
NICD	12.00	1.5	40	40	GE	AE	034A	NONE	6.00	9.60	NONE	5	1-27-67
NICD	12.00	1.5	40	25	GE	AE	024A	NONE	9.60	9.60	NONE	5	10- 2-65
NICD	12.00	1.5	40	25	GE	AE	024B	NONE	6.00	9.60	NONE	5	1- 5-67
NICD	12.00	1.5	40	25	GE	NONE	096A	125	6.00	9.60	1.49	5	1- 4-64
NICD	12.00	1.5	40	25	GU	NONE	096B	125	6.00	9.60	1.49	5	12- 2-64
NICD	12.00	3.0	25	25	GE	NONE	083A	125	1.50	6.00	1.49	5	1- 4-64
NICD	12.00	1.5	40	00	GE	AE	072A	NONE	6.00	6.00	NONE	5	1-20-67
NICD	12.00	1.5	25	40	GE	AE	036A	NONE	6.00	6.00	NONE	5	1-27-67
NICD	12.00	1.5	25	40	GE	NONE	099A	160	4.80	6.00	1.45	5	1- 9-64
NICD	12.00	1.5	25	40	GU	NONE	090B	160	8.00	10.00	1.45	5	12- 5-64
NICD	12.00	1.5	25	25	GE	AE	012A	NONE	6.00	6.00	NONE	5	7-20-65
NICD	12.00	1.5	25	25	GE	AE	012B	NONE	6.00	6.00	NONE	5	1- 6-67
NICD	12.00	1.5	25	25	GU	NONE	027B	125	3.75	6.00	1.49	5	1-28-65
NICD	12.00	1.5	25	25	GE	NONE	082A	125	3.75	6.00	1.49	5	1- 4-64
NICD	12.00	1.5	25	00	GE	AE	048A	NONE	9.60	9.60	NONE	5	10-12-65
NICD	12.00	1.5	25	00	GE	AE	058A	NONE	6.00	6.00	NONE	5	1-20-67
NICD	12.00	1.5	25	00	GE	AE	060A	NONE	6.00	6.00	NONE	5	10- 6-65
NICD	12.00	1.5	15	40	GE	NONE	085A	160	2.88	3.60	1.45	5	1- 9-64
NICD	12.00	1.5	15	40	GU	NONE	078A	160	2.88	3.60	1.45	5	12-22-64
NICD	10.00	1.5	25	40	GU	AE	006B	NONE	5.00	5.00	NONE	5	11-27-67
NICD	10.00	1.5	25	25	GU	AE	008B	NONE	5.00	5.00	NONE	5	11-27-67
NICD	6.00	1.5	40	*	GU	AE	048B	NA	4.80	4.80	NONE	5	4-25-66
NICD	6.00	24.0	50	25	GU	NONE	079A	115	0.20	3.00	1.49	5	3-28-66
NICD	6.00	3.0	40	25	GU	NONE	018A	125	1.20	4.80	1.49	10	12-31-66
NICD	6.00	1.5	25	40	GE	PLSEP	027C	NON	4.80	4.80	NONE	5	11- 7-66
NICD	6.00	1.5	25	40	GE	RDSEP	009G	NONE	4.80	4.80	NONE	5	11- 7-66

FOLDOUT FRAME

FOLD

INFORMATION ON COMPLETED TESTS

SPSYM	PACK	PRCHG	CHGCU	DISCU	VOLIM	NUMCP	STARTED	COMPLETED	CYCLES
AE	034A	NONE	6.00	9.60	NONE	5	1-27-67	2- 3-67	65
AE	024A	NONE	9.60	9.60	NONE	5	10- 2-65	11-19-65	665
AE	024B	NONE	6.00	9.60	NONE	5	1- 5-67	2-10-67	38
NONE	096A	125	6.00	9.60	1.49	5	1- 4-64	10- 2-64	4020
NONE	096B	125	6.00	9.60	1.49	5	12- 2-64	11- 9-65	5152
NONE	083A	125	1.50	6.00	1.49	5	1- 4-64	1-29-69	13897
AE	072A	NONE	6.00	6.00	NONE	5	1-20-67	2- 2-67	304
AE	036A	NONE	6.00	6.00	NONE	5	1-27-67	2- 3-67	75
NONE	099A	160	4.80	6.00	1.45	5	1- 9-64	1- 5-65	4853
NONE	090B	160	8.00	10.00	1.45	5	12- 5-64	11-10-65	5124
AE	012A	NONE	6.00	6.00	NONE	5	7-20-65	12- 1-65	1698
AE	012B	NONE	6.00	6.00	NONE	5	1- 6-67	2-10-67	404
NONE	027B	125	3.75	6.00	1.49	5	1-28-65	9- 5-67	14250
NONE	082A	125	3.75	6.00	1.49	5	1- 4-64	12-30-65	10878
AE	048A	NONE	9.60	9.60	NONE	5	10-12-65	2-10-67	5110
AE	058A	NONE	6.00	6.00	NONE	5	1-20-67	2-10-67	136
AE	060A	NONE	6.00	6.00	NONE	5	10- 6-65	10-20-66	5650
NONE	085A	160	2.88	3.60	1.45	5	1- 9-64	11- 8-65	9710
NONE	078A	160	2.88	3.60	1.45	5	12-22-64	1- 4-66	11081
AE	006B	NONE	5.00	5.00	NONE	5	11-27-67	3-14-68	5685
AE	008B	NONE	5.00	5.00	NONE	5	11-27-67	5- 6-68	2414
AE	048B	NA	4.80	4.80	NONE	5	4-25-67	7- 9-68	6156
NONE	079A	115	0.20	3.00	1.49	5	3-28-64	10-13-65	545
NONE	018A	125	1.20	4.80	1.49	10	12-31-63	8-18-64	1550
RLSEP	027C	NON	4.80	4.80	NONE	5	11- 7-68	12-16-68	559
RDSEP	009G	NONE	4.80	4.80	NONE	5	11- 7-68	11-21-68	143

FOLDOUT FRAME

INFORMATION ON COMPLETED TESTS

TYPE	AMPHR	PEROD	DEPTH	TEMP	MANFR	SPSYM	PACK	PRCHG	CHGCU	DISCU	VOLIM	NUMCP	STARTED
NICD	6.00	3.0	25	40	GU	NONE	042A	160	1.20	3.00	1.45	10	12-31-63
NICD	6.00	3.0	25	25	GU	NONE	017A	125	0.75	3.00	1.49	10	12-20-63
NICD	6.00	1.5	25	00	GU	AE	059A	NONE	3.00	3.00	NONE	5	4-15-67
NICD	6.00	3.0	25	00	GU	NONE	066A	115	0.69	3.00	1.55	10	12-31-63
NICD	6.00	1.5	15	40	GE	AE	047C		1.80	1.80		5	7-18-68
NICD	6.00	3.0	15	40	GU	NONE	041A	160	0.58	1.80	1.45	10	12-31-63
NICD	6.00	3.0	15	00	GU	NONE	065A	115	0.41	1.80	1.55	10	12-31-63
NICD	6.00	1.5	40	25	GU	IM	018B	125	3.00	4.80	1.49	5	2-22-65
NICD	6.00	1.5	40	25	GU	AE	011A	NONE	4.80	4.80	NONE	5	2- 5-65
NICD	6.00	1.5	40	00	GU	AE	071A	NONE	4.80	4.80	NONE	5	4-15-65
NICD	6.00	1.5	25	40	GU	NONE	038A	160	2.40	3.00	1.45	10	12-30-63
NICD	6.00	1.5	25	40	GU	IM	038B	160	2.40	3.00	1.45	5	2-22-65
NICD	6.00	1.5	25	40	GU	AE	047A	NONE	3.00	3.00	NONE	5	5-16-67
NICD	6.00	1.5	25	40	GU G	CLM	038C	NONE	3.00	3.00	1.45	5	5- 7-66
NICD	6.00	1.5	25	25	GU	NONE	013A	125	1.88	3.00	1.49	10	12-31-63
NICD	6.00	1.5	25	25	GU	NONE	014A	125	3.00	4.80	1.49	10	12-30-63
NICD	6.00	1.5	25	00	GU	NONE	062A	115	1.72	3.00	1.55	10	12-30-63
NICD	6.00	1.5	15	40	GU	AE	035A	NONE	1.80	1.80	1.45	5	6-28-65
NICD	6.00	1.5	15	40	GU	NONE	037A	160	0.14	1.80	1.45	10	12-31-63
NICD	6.00	1.5	15	00	GU	NONE	061A	115	1.04	1.80	1.55	10	12-31-63
NICD	5.60	1.5	25	40	GU	RS	030B	160	2.24	2.80	1.45	5	12- 3-65
NICD	5.60	1.5	25	40	GU	FRS	042B	160	2.24	2.80	1.45	5	12- 3-65
NICD	5.60	1.5	25	25	GU	RS	096C	125	1.75	2.80	1.49	5	12-10-65
NICD	5.00	3.0	40	25	SO	NONE	006A	125	1.00	4.00	1.49	10	1- 2-64
NICD	5.00	3.0	25	40	SO	NONE	030A	160	0.80	2.50	1.45	10	12-31-63
NICD	5.00	3.0	25	25	SO	NONE	005A	125	0.62	2.50	1.49	10	12-31-63

FOLDOUT FRAME

INFORMATION ON COMPLETED TESTS

SPSYM	PACK	PRCHG	CHGCU	DISCU	VOLIM	NUMCP	STARTED	COMPLETED	CYCLES
NONE	042A	160	1.20	3.00	1.45	10	12-31-63	8-23-65	4133
NONE	017A	125	0.75	3.00	1.49	10	12-20-63	1-31-65	2885
AE	059A	NONE	3.00	3.00	NONE	5	4-15-67	2-28-68	14863
NONE	066A	115	0.69	3.00	1.55	10	12-31-63	8-31-65	4414
AE	047C		1.80	1.80		5	7-18-68	7-28-69	5842
NONE	041A	160	0.58	1.80	1.45	10	12-31-63	9-14-64	1689
NONE	065A	115	0.41	1.80	1.55	10	12-31-63	2-15-68	11208
IM	018B	125	3.00	4.80	1.49	5	2-22-65	7-21-66	7577
AE	011A	NONE	4.80	4.80	NONE	5	2- 5-65	7- 9-66	7743
AE	071A	NONE	4.80	4.80	NONE	5	4-15-65	5-18-66	5754
NONE	038A	160	2.40	3.00	1.45	10	12-30-63	5-22-64	1377
IM	038B	160	2.40	3.00	1.45	5	2-22-65	3-31-66	5766
AE	047A	NONE	3.00	3.00	NONE	5	5-16-67	5-11-66	5521
CLM	038C	NONE	3.00	3.00	1.45	5	5- 7-66	9-20-66	4059
NONE	013A	125	1.88	3.00	1.49	10	12-31-63	11-11-64	4021
NONE	014A	125	3.00	4.80	1.49	10	12-30-63	6-19-64	2086
NONE	062A	115	1.72	3.00	1.55	10	12-30-63	2-15-68	22779
AE	035A	NONE	1.80	1.80	1.45	5	6-28-65	11-30-67	12511
NONE	037A	160	0.14	1.80	1.45	10	12-31-63	4-14-65	6064
NONE	061A	115	1.04	1.80	1.55	10	12-31-63	12-17-65	10146
RS	030B	160	2.24	2.80	1.45	5	12- 3-65	3- 8-66	1275
FRS	042B	160	2.24	2.80	1.45	5	12- 3-65	9-10-66	3798
RS	096C	125	1.75	2.80	1.49	5	12-10-65	9-19-67	9791
NONE	006A	125	1.00	4.00	1.49	10	1- 2-64	12-13-65	5211
NONE	030A	160	0.80	2.50	1.45	10	12-31-63	8- 7-65	4141
NONE	005A	125	0.62	2.50	1.49	10	12-31-63	2-12-68	11092

FOLDOUT FRAME

INFORMATION ON COMPLETED TESTS

TYPE	AMPHR	PEROD	DEPTH	TEMP	MANFR	SPSYM	PACK	PRCHG	CHGCU	DISCU	VOLIM	NUMCP	STARTE
NICD	5.00	1.5	25	25	SO	AE	014D	NONE	2.50	1.47	1.50	5	11-37-6
NICD	5.00	3.0	25	00	SO	NONE	054A	115	0.58	2.50	1.55	10	12-31-6
NICD	5.00	3.0	15	40	SO	NONE	029A	160	0.48	1.50	1.45	10	12-31-6
NICD	5.00	3.0	15	00	SO	NONE	053A	115	0.35	1.50	1.55	10	12-31-6
NICD	5.00	1.5	40	25	SO	NONE	002A	125	2.50	4.00	1.49	10	12-17-6
NICD	5.00	1.5	40	25	SO	ST	087B	NONE	5.00	4.00	NONE	5	8-12-6
NICD	5.00	1.5	40	-20	SO	ST	089B	NONE	5.00	4.00	NONE	5	10-24-6
NICD	5.00	1.5	40	00	SO	ST	122B	NONE	5.00	4.00	NONE	5	9- 5-6
NICD	5.00	1.5	25	40	GE	NBPT	114A	130	1.63	2.50	1.49	5	6-12-6
NICD	5.00	1.5	25	40	GU	NBPT	128A	130	1.63	2.50	1.49	5	6-12-6
NICD	5.00	1.5	25	40	SO	NONE	026A	160	2.00	2.50	1.45	10	12-17-6
NICD	5.00	1.5	25	40	SO	ST	099B	NONE	5.00	2.50	NONE	5	8-23-6
NICD	5.00	1.5	25	25	SO	NONE	001A	125	1.56	2.50	1.49	10	12-17-6
NICD	5.00	1.5	25	25	GE	NBPT	104B	120	1.50	2.50	1.49	5	6-10-6
NICD	5.00	1.5	25	25	GU	NBPT	118B	120	1.50	2.50	1.49	5	6-10-6
NICD	5.00	1.5	25	25	SO	ST	073B	NONE	5.00	2.50	NONE	5	8-12-6
NICD	5.00	1.5	25	-20	SO	ST	075C	NONE	5.00	2.50	NONE	5	10-24-6
NICD	5.00	1.5	25	00	SO	NONE	050A	115	1.44	2.50	1.55	10	12-17-6
NICD	5.00	1.5	25	00	SO	ST	092A	NONE	5.00	2.50	NONE	5	9- 5-6
NICD	5.00	1.5	25	00	GU	NBPT	121A	110	1.38	2.50	1.49	5	6- 5-6
NICD	5.00	1.5	15	40	GE	NB	113A	130	0.98	1.50	1.45	5	4-24-6
NICD	5.00	1.5	15	40	GU	NB	127A	130	0.98	1.50	1.45	5	4-29-6
NICD	5.00	1.5	15	40	SO	NONE	025A	160	1.20	1.50	1.45	10	12-17-6
NICD	5.00	1.5	15	40	SO	ST	112B	NONE	5.00	1.50	NONE	5	8-23-6
NICD	5.00	1.5	15	00	SO	NONE	049A	115	0.86	1.50	1.55	10	12-31-6
NICD	4.00	1.5	15	40	GU	CC	028B	160	0.96	1.20	1.45	5	8- 4-6

FOLDOUT FRAME

FOLD

INFORMATION ON COMPLETED TESTS

SPSYM	PACK	PRCHG	CHGCU	DISCU	VOLIM	NUMCP	STARTED	COMPLETED	CYCLES
AE	014D	NONE	2.50	1.47	1.50	5	11-37-67	2- 4-68	1179
NONE	054A	115	0.58	2.50	1.55	10	12-31-63	2- 7-68	11331
NONE	029A	160	0.48	1.50	1.45	10	12-31-63	4-17-66	5975
NONE	053A	115	0.35	1.50	1.55	10	12-31-63	2-13-68	11427
NONE	002A	125	2.50	4.00	1.49	10	12-17-63	4-24-65	6671
ST	087B	NONE	5.00	4.00	NONE	5	8-12-65	1-27-66	2392
ST	089B	NONE	5.00	4.00	NONE	5	10-24-65	2-26-66	1530
ST	122B	NONE	5.00	4.00	NONE	5	9- 5-65	9-24-66	5190
NBPT	114A	130	1.63	2.50	1.49	5	6-12-65	12-19-66	8273
NBPT	128A	130	1.63	2.50	1.49	5	6-12-65	8-18-66	6345
NONE	026A	160	2.00	2.50	1.45	10	12-17-63	10-15-64	3625
ST	099B	NONE	5.00	2.50	NONE	5	8-23-65	7- 9-66	4388
NONE	001A	125	1.56	2.50	1.49	10	12-17-63	2-27-66	11745
NBPT	104B	120	1.50	2.50	1.49	5	6-10-65	11-15-67	13149
NBPT	118B	120	1.50	2.50	1.49	5	6-10-65	11-22-66	8108
ST	073B	NONE	5.00	2.50	NONE	5	8-12-65	4-15-66	3742
ST	075C	NONE	5.00	2.50	NONE	5	10-24-65	4- 5-66	2145
NONE	050A	115	1.44	2.50	1.55	10	12-17-63	2-15-68	22525
ST	092A	NONE	5.00	2.50	NONE	5	9- 5-65	5-24-67	8774
NBPT	121A	110	1.38	2.50	1.49	5	6- 5-65	3- 5-69	20861
NB	113A	130	0.98	1.50	1.45	5	4-24-65	3-15-66	4998
NB	127A	130	0.98	1.50	1.45	5	4-29-65	5-24-67	10638
NONE	025A	160	1.20	1.50	1.45	10	12-17-63	10-31-65	9328
ST	112B	NONE	5.00	1.50	NONE	5	8-23-65	4- 1-66	3294
NONE	049A	115	0.86	1.50	1.55	10	12-31-63	2-15-68	23112
CC	028B	160	0.96	1.20	1.45	5	6- 4-64	7- 6-68	20227

FOLDOUT FRAME

INFORMATION ON COMPLETED TESTS

TYPE	AMPHR	PEROD	DEPTH	TEMP	MANFR	SPSYM	PACK	PRCHG	CHGCU	DISCU	VOLIM	NUMCP	STARTED
NICD	4.00	1.5	25	00	GU	CLM	052B	NONE	2.00	2.00	1.48	5	3- 3-67
NICD	4.00	1.5	60	25	GU	CLM	038D	NONE	3.20	3.20	1.44	5	2-18-67
NICD	4.00	1.5	40	25	GU	CC	014B	125	2.00	3.20	1.49	5	8- 4-64
NICD	4.00	1.5	40	25	GU	CLM	037C	NONE	4.80	4.80	1.44	5	3- 4-67
NICD	4.00	1.5	25	40	GU	CLM	039C	NONE	2.00	2.00	1.38	5	3- 3-67
NICD	4.00	1.5	25	40	GU	CC	040B	160	1.60	2.00	1.45	5	8- 4-64
NICD	4.00	1.5	25	25	GU	CLM	014C	NONE	2.00	2.00	1.44	5	3- 3-67
NICD	4.00	1.5	15	25	GU	CLM	026C	NONE	1.20	1.20	1.44	5	2-18-67
NICD	4.00	1.5	25	-20	GU	CLM	040C	NONE	2.00	2.00	1.56	5	3- 4-67
NICD	3.90	1.5	25	25	NIFE	NONE	085C	107	1.07	2.00	1.50	5	9-29-67
NICD	3.60	1.5	40	25	GU	CLM	039B	NONE	3.60	2.88	1.49	10	11-11-65
NICD	3.50	3.0	40	25	GO	NONE	008A	125	0.75	2.80	1.49	10	12-20-63
NICD	3.50	3.0	25	40	GO	NONE	032A	160	0.56	1.75	1.45	10	12-20-63
NICD	3.50	1.5	40	25	GU	PS	073C	125	1.75	2.80	1.49	5	12-23-66
NICD	3.50	1.5	25	40	GU	PS	112C	160	1.40	1.75	1.45	5	1- 2-67
NICD	3.50	3.0	25	25	GO	NONE	007A	125	0.44	1.75	1.49	10	12-20-63
NICD	3.50	3.0	25	00	GO	NONE	056A	115	0.40	1.75	1.55	10	12-20-63
NICD	3.50	3.0	15	40	GO	NONE	031A	160	0.34	1.05	1.45	10	12-20-63
NICD	3.50	3.0	15	00	GO	NONE	055A	115	0.24	1.05	1.55	10	12-20-63
NICD	3.50	1.5	25	00	GO	NONE	052A	115	1.00	1.75	1.55	10	12- 5-63
NICD	3.50	1.5	40	25	GO	NONE	004A	125	1.72	2.80	1.49	10	12- 5-63
NICD	3.50	1.5	25	40	GO	NONE	028A	160	1.40	1.75	1.45	10	12-12-63
NICD	3.50	1.5	25	25	GO	NONE	003A	125	1.09	1.75	1.49	10	12- 6-63
NICD	3.50	1.5	15	40	GO	NONE	027A	160	0.84	1.05	1.45	10	12-12-63
NICD	3.50	1.5	15	00	GO	NONE	051A	115	0.60	1.05	1.55	10	12- 5-63
NICD	3.00	3.0	40	25	GE	NONE	020A	125	0.60	2.40	1.49	10	12-20-63

) INFORMATION ON COMPLETED TESTS

PSYM	PACK	PRCHG	CHGCU	DISCU	VOLIM	NUMCP	STARTED	COMPLETED	CYCLES
LM	052B	NONE	2.00	2.00	1.48	5	3- 3-67	3- 4-68	5671
LM	038D	NONE	3.20	3.20	1.44	5	2-18-67	6-27-67	1927
C	014B	125	2.00	3.20	1.49	5	8- 4-64	3-19-66	8474
LM	037C	NONE	4.80	4.80	1.44	5	3- 4-67	5- 5-67	790
LM	039C	NONE	2.00	2.00	1.38	5	3- 3-67	6-20-67	1508
C	040B	160	1.60	2.00	1.45	5	8- 4-64	6-22-66	10360
LM	014C	NONE	2.00	2.00	1.44	5	3- 3-67	8- 8-67	2428
LM	026C	NONE	1.20	1.20	1.44	5	2-18-67	2-28-69	11455
LM	040C	NONE	2.00	2.00	1.56	5	3- 4-67	3- 4-67	2
ONE	085C	107	1.07	2.00	1.50	5	9-29-67	6-18-69	9356
LM	039B	NONE	3.60	2.88	1.49	10	11-11-65	12- 6-66	5399
ONE	008A	125	0.75	2.80	1.49	10	12-20-63	11-29-64	2494
ONE	032A	160	0.56	1.75	1.45	10	12-20-63	6-10-64	975
S	073C	125	1.75	2.80	1.49	5	12-23-66	10-28-68	9978
S	112C	160	1.40	1.75	1.45	5	1- 2-67	1- 3-69	11155
ONE	007A	125	0.44	1.75	1.49	10	12-20-63	7-26-65	4173
ONE	056A	115	0.40	1.75	1.55	10	12-20-63	2-15-68	11897
ONE	031A	160	0.34	1.05	1.45	10	12-20-63	1- 3-65	2517
ONE	055A	115	0.24	1.05	1.55	10	12-20-63	2-15-68	11546
ONE	052A	115	1.00	1.75	1.55	10	12- 5-63	6-11-66	13730
ONE	004A	125	1.72	2.80	1.49	10	12- 5-63	7- 9-64	3164
ONE	028A	160	1.40	1.75	1.45	10	12-12-63	5-29-64	1811
ONE	003A	125	1.09	1.75	1.49	10	12- 6-63	10-31-64	4751
ONE	027A	160	0.84	1.05	1.45	10	12-12-63	11- 4-64	4485
ONE	051A	115	0.60	1.05	1.55	10	12- 5-63	2-15-68	22364
ONE	020A	125	0.60	2.40	1.49	10	12-20-63	1- 8-66	5410

FOLDOUT FRAME

INFORMATION ON COMPLETED TESTS

TYPE	AMPHR	PEROD	DEPTH	TEMP	MANFR	SPSYM	PACK	PRCHG	CHGCU	DISCU	VOLIM	NUMCP	STAR1
NICD	3.00	3.0	25	40	GE	NONE	044A	160	0.48	1.50	1.45	10	12-20-
NICD	3.00	3.0	25	25	GE	NONE	019A	125	0.30	1.50	1.49	10	12-20-
NICD	3.00	3.0	25	00	GE	NONE	068A	115	0.34	1.50	1.55	10	12-20-
NICD	3.00	3.0	15	40	GE	NONE	043A	160	0.29	0.90	1.45	10	12-20-
NICD	3.00	3.0	15	00	GE	NONE	067A	115	0.21	0.90	1.55	10	12-20-
NICD	3.00	1.5	40	25	GE	NONE	016A	125	1.50	2.40	1.49	10	12- 5-
NICD	3.00	1.5	40	25	SO	3S	002B	125	1.50	2.40	1.49	5	7-10-
NICD	3.00	1.5	25	40	GE	NONE	040A	160	1.20	1.50	1.45	10	12-12-
NICD	3.00	1.5	25	40	SO	3S	037B	160	1.20	1.50	1.45	5	7-10-
NICD	5.60	1.5	25	25	GU	FRS	076B	125	1.75	2.80	1.49	5	12-10-
NICD	6.00	1.5	25	25	GU	AE	023A	NONE	3.00	3.00	1.49	5	2- 5-
NICD	3.00	1.5	25	25	GE	NONE	015A	125	0.94	1.50	1.49	10	12- 6-
NICD	3.00	1.5	25	25	SO	3S	003B	125	0.94	1.50	1.49	5	6-25-
NICD	3.00	1.5	25	00	GE	NONE	064A	115	0.86	1.50	1.55	10	12- 5-
NICD	3.00	1.5	15	40	GE	NONE	039A	160	0.72	0.90	1.45	10	12-12-
NICD	3.00	1.5	15	40	SO	3S	026B	160	0.72	0.90	1.45	5	7-10-
NICD	3.00	1.5	15	00	GE	NONE	063A	115	0.52	0.90	1.55	10	12- 6-
NICD	1.25	1.5	60	00	GU	NONE	098B	NONE	1.25	1.50	NONE	5	3- 4-
PBCA	5.00	1.5	40	25	CD	NONE	009B	NONE	2.39	2.39	2.25	5	8-23-

FOLDOUT FRAME

INFORMATION ON COMPLETED TESTS

SYM	PACK	PRCHG	CHGCU	DISCU	VOLIM	NUMCP	STARTED	COMPLETED	CYCLES
NE	044A	160	0.48	1.50	1.45	10	12-20-63	9-14-65	4487
NE	019A	125	0.38	1.50	1.49	10	12-20-63	2-12-68	10768
NE	068A	115	0.34	1.50	1.55	10	12-20-63	2-13-68	11740
NE	043A	160	0.29	0.90	1.45	10	12-20-63	12-26-64	2656
NE	067A	115	0.21	0.90	1.55	10	12-20-63	2-15-68	11532
NE	016A	125	1.50	2.40	1.49	10	12- 5-63	11-18-64	5014
	002B	125	1.50	2.40	1.49	5	7-10-65	7-26-66	5399
NE	040A	160	1.20	1.50	1.45	10	12-12-63	7- 9-64	2511
	037B	160	1.20	1.50	1.45	5	7-10-65	8- 4-66	5625
S	076B	125	1.75	2.80	1.49	5	12-10-65	1- 2-68	11158
	023A	NONE	3.00	3.00	1.49	5	2- 5-65	1-24-68	15713
NE	015A	125	0.94	1.50	1.49	10	12- 6-63	11- 6-65	10382
	003B	125	0.94	1.50	1.49	5	6-25-65	8-23-67	11726
NE	064A	115	0.86	1.50	1.55	10	12- 5-63	2-14-68	23441
NE	039A	160	0.72	0.90	1.45	10	12-12-63	6-19-65	8109
	026B	160	0.72	0.90	1.45	5	7-10-65	10- 4-66	6285
NE	063A	115	0.52	0.90	1.55	10	12- 6-63	2-15-68	22923
NE	098B	NONE	1.25	1.50	NONE	5	3- 4-66	5-28-68	12247
NE	009B	NONE	2.39	2.39	2.25	5	8-23-65	9-21-65	39

FOLDOUT FRAME

FOOTNOTE

* THESE CELLS ARE IN AMBIENT TEMPERATURE, WHICH VARIES SINUSOIDALLY FROM ZERO TO FORTY DEGREES CENTIGRADE WITHIN A PERIOD OF 48 HOURS.
* PACKS 15B AND 61B HAVE RECEIVED 22,900 CYCLES AT 10 PERCENT DEPTH OF DISCHARGE, AND AT -10 DEGREES CENTIGRADE BEFORE CYCLE ONE WAS STARTED AT N.A.D. CRANE

MULTI THESE PACKS CONTAIN TWO CELLS WITH THIRD ELECTRODES, A COULOMETER PRESSURE TRANSDUCERS, AND PRESSURE GAGES

FOLDOUT FRAME

FOLDOUT FRAME

DATA AVAILABLE

1. The lists of data available, with the approval of Goddard Space Flight Center, are listed below. This information is stored on magnetic tape files at NAD Crane and must be obtained through the use of computer programs. Since the computer programs are time consuming a time lapse of several weeks between the request and the receipt of the data can be expected.

   a. Additional copies of this report.

   b. Serial numbers of cells in the various packs.

   c. Capacity check information; parameters and results.

   d. Cell failure analysis.

   e. Data recorded from packs during automatic cycling.

   f. Determination of number of cells in pack, middle and end of discharge voltages, end of charge voltage and percent recharge. This is all calculated from the data in paragraph 1.e. above.