ATTACHMENT 2

1D650

WORST CASE LOAD PROFILE

BASED ON THE THEORETICAL MAXIMUM

EQUIPMENT THAT

COULD START SIMULTANEOUSLY

Using the 1D650 Battery Load Profiles developed in Attachment 1, determine the maximum load profiles that could occur if all equipment that could start simultaneously did in fact start simultaneously for the following time segments. This approach is being used to assure that variations in the timing of the MOVs are enveloped by the Technical Specification.

LOAD SEGMENTS

0 - 60 seconds

1 - 10 minutes 

10 - 30 minutes

30 - 240 minutes

1 - 5 minutes (Station Blackout) 

5 - 6 minutes (Station Blackout)

6 - 10 minutes (Station Blackout)

The composite 1D650 Battery Load Profile for all modes of operation, including Station Blackout, is shown in Table 7 - 1.

1.0 LARGE BREAK LOCA PROFILE

The Table A2 - 1 shows the maximum possible 1D650 Battery Load Profile for a LARGE BREAK LOCA with all equipment starting simultaneously.

1.1 0 - 60 seconds

During this load segment the following equipment cannot be operated simultaneously with the others loads.

1.11 HV-E51-1F045 inrush amperes are not use since HV-E51-1F045 MUST BE out of Locked Rotor before HV-E51-1F013 can be started.

1.12 1P155A inrush amperes are not used since this motor has a 6 second definite time timer which prevents simultaneous starting with the other equipment.

1.13 HV-E51-1F010 inrush amperes are not used since HV-E51-1F031 MUST BE closed before HV-E51-1F010 can operate. This prevents simultaneous starting with the other equipment.

1.14 HV-E41-1F079 inrush amperes are not used since Reactor Pressure MUST drop to 105.5 psi before HV-E41-1F079 can operate. This occurs after all the equipment in this load segment has started.

1.2 1 - 10 Minute

All the equipment in this load segment is assumed to operate simultaneously.

1.3 10 - 30 Minute

All the equipment in this load segment is assumed to operate simultaneously.

1.4 30 - 240 Minute

All the equipment in this load segment is assumed to operate simultaneously.

2.0 LARGE BREAK LOCA RCIC IN PRESSURE CONTROL PROFILE

The Table A2 - 2 shows the maximum possible 1D650 Battery Load Profile for a LARGE BREAK LOCA RCIC IN PRESSURE CONTROL with all equipment starting simultaneously.

2.1 0 - 60 seconds

During this load segment the following equipment cannot be operated simultaneously with the others loads.

2.11 1P155A inrush amperes are not used since this motor has a 6 second definite time timer which prevents simultaneous starting with the other equipment.

2.12 HV-E51-1F010 inrush amperes are not used since HV-E51-1F031 MUST BE closed before HV-E51-1F010 can operate. This prevents simultaneous starting with the other equipment.

2.13 HV-E41-1F079 inrush amperes are nor used since Reactor Pressure MUST drop to 105.5 psi before HV-E41-1F079 can operate. This occurs after all the equipment in this load segment has started.

2.2 1 - 10 Minute

All the equipment in this load segment is assumed to operate simultaneously.

2.3 10 - 30 Minute

All the equipment in this load segment is assumed to operate simultaneously.

2.4 30 - 240 Minute

All the equipment in this load segment is assumed to operate simultaneously.

3.0 SMALL BREAK LOCA PROFILE

The Table A2 - 3 shows the potential maximum possible 1D650 Battery Load Profile for a SMALL BREAK LOCA with all equipment starting simultaneously.

3.1 0 - 60 seconds

During this load segment the following equipment cannot be operated simultaneously with the others loads.

3.11 HV-E51-1F045 inrush amperes are not use since HV-E51-1F045 MUST BE out of Locked Rotor before HV-E51-1F013 can be started.

3.12 1P155A inrush amperes are not used since this motor has a 6 second definite time timer which prevents simultaneous starting with the other equipment.

3.13 HV-E51-1F010 inrush amperes are not used since HV-E51-1F031 MUST BE closed before HV-E51-1F010 can operate. This prevents simultaneous starting with the other equipment.

3.2 1 - 10 Minute

All the equipment in this load segment is assumed to operate simultaneously.

3.3 10 - 30 Minute

All the equipment in this load segment is assumed to operate simultaneously.

3.4 30 - 240 Minute

All the equipment in this load segment is assumed to operate simultaneously.

4.0 SMALL BREAK LOCA RCIC IN PRESSURE CONTROL PROFILE

The Table A2 - 4 shows the maximum possible 1D650 Battery Load Profile for a SMALL BREAK LOCA RCIC IN PRESSURE CONTROL with all equipment starting simultaneously.

4.1 0 - 60 seconds

During this load segment the following equipment cannot be operated simultaneously with the others loads.

4.11 1P155A inrush amperes are not used since this motor has a 6 second definite time timer which prevents simultaneous starting with the other equipment.

4.12 HV-E51-1F010 inrush amperes are not used since HV-E51-1F031 MUST BE closed before HV-E51-1F010 can operate. This prevents simultaneous starting with the other equipment.

4.2 1 - 10 Minute

All the equipment in this load segment is assumed to operate simultaneously.

4.3 10 - 30 Minute

All the equipment in this load segment is assumed to operate simultaneously.

4.4 30 - 240 Minute

All the equipment in this load segment is assumed to operate simultaneously.

5.0 STATION BLACKOUT PROFILE

The Table A2 - 5 shows the maximum possible 1D650 Battery Load Profile for a STATION BLACKOUT with all equipment starting simultaneously.

5.1 0 - 60 seconds

During this load segment the following equipment cannot be operated simultaneously with the others loads.

5.11 HV-E51-1F045 inrush amperes are not use since HV-E51-1F045 MUST BE out of Locked Rotor before HV-E51-1F013 can be started.

5.12 1P155A inrush amperes are not used since this motor has a 6 second definite time timer which prevents simultaneous starting with the other equipment.

5.2 1 - 5 Minute

All the equipment in this load segment operates simultaneously.

5.3 5 - 6 Minute

All the equipment in this load segment operates simultaneously.

5.4 6 - 10 Minute

All the equipment in this load segment operates simultaneously.

5.3 10 - 30 Minute

All the equipment in this load segment operates simultaneously.

5.4 30 - 240 Minute

All the equipment in this load segment operates simultaneously.

LARGE BREAK LOCA - 1D650 LOAD PROFILE DURING LOCA / RCIC ISOLATION
CURRENT CALCULATED AT 250 VDC

EQUIPMENT	MCC	0 -60 s	1 -10 MIN	10-30 MIN	30-240MIN
HV-E51-1F045	1D254	8	0	0	0
HV-E51-1F013	1D254	42.2	42.2	0	0
HV-E51-1F046	1D254	7.8	0	0	0
FV-E51-1F019	1D254	26.4	0	0	0
1P219	1D254	23.7	11.2	11.2	11.2
1P125B	1D155	87.2	37.9	37.9	0
1P125C	1D155	87.2	37.9	37.9	0
1P155A	1D155	0	4	4	0
1P110	1D155	144.1	73.3	73.3	0
1D656	1D656	332	332	332	0
HV-E51-1F031	1D254	4	0	0	0
HV-E51-1F010	1D254	0	4	0	0
1P220	1D254	24.8	13.4	13.4	13.4
HV-E41-1F079	1D254	0	0	0	0
HV-E51-1F062	1D254	0	10.2	0	0
HV-E51-1F008	1D254	0	17.2	0	0
TOTAL		787.4	583 3	509.7	24.8
1D656		332	332	332	0
1D155		318.5	153.1	153.1	0
1D254		136.9	98.2	24.8	24.8

1D650LBL.XLS

TABLE A2 - 1

LARGE BREAK LOCA RCIC IN PRESSUE CONTROL - 1D650 LOAD PROFILE DURING LOCA / RCIC ISOLATION
CURRENT CALCULATED AT 250 VDC

EQUIPMENT	MCC	0 - 60s	1 - 10 MIN	10-30 MIN	30-240MIN
HV-E51-1F045	1D254	0	0	0	0
HV-E51-1F013	1D254	42.2	42.2	0	0
HV-E51-1F046	1D254	0	0	0	0
FV-E51-1F019	1D254	0	0	0	0
1P219	1D254	11.2	11.2	11.2	11.2
1P125B	1D155	87.2	37.9	37.9	0
1P125C	1D155	87.2	37.9	37.9	0
1P155A	1D155	0	4	4	0
1P110	1D155	144.1	73.3	73.3	0
1D658	1D658	332	332	332	0
HV-E51-1F031	1D254	4	0	0	0
HV-E51-1F010	1D254	0	4	0	0
1P220	1D254	24.8	13.4	13.4	13.4
HV-E41-1F079	1D254	0	0	0	0
HV-E51-1F062	1D254	0	10.3	0	0
HV-E51-1F008	1D254	0	17.2	0	0
HV-E51-1F022	1D254	23	0	0	0
TOTAL		755.7	583.4	509.7	24.6
1D658		332	332	332	0
1D155		318.5	153.1	153.1	0
1D254		105.2	98.3	24.6	24.6

SMALL BREAK LOCA - 1D650 LOAD PROFILE
CURRENT CALCULATED AT 250 VDC

EQUIPMENT	MCC	0 - 60s	1 - 10 MIN	10-30 MIN	30-240MIN
HV-E51-1F045	1D254	8	0	0	0
HV-E51-1F013	1D254	42.2	0	0	0
HV-E51-1F046	1D254	7.8	0	0	0
FV-E51-1F019	1D254	26.4	0	0	0
1P219	1D254	23.7	11.2	11.2	11.2
1P125B	1D155	87.2	37.9	37.9	0
1P125C	1D155	87.2	37.9	37.9	0
1P155A	1D155	0	4	4	0
1P110	1D155	144.1	73.3	73.3	0
1D656	1D656	332	332	332	0
HV-E51-1F031	1D254	4	0	0	0
HV-E51-1F010	1D254	0	4	0	0
1P220	1D254	24.8	13.4	13.4	13.4
HV-E41-1F079	1D254	0	0	0	0
HV-E51-1F062	1D254	0	0	0	0
HV-E51-1F008	1D254	0	0	0	0
TOTAL		787.4	513.7	509.7	24.6
1D656		332	332	332	0
1D155		318.5	153.1	153.1	0
1D254		136.9	28.6	24.6	24.6

1D650SBL.XLS

TABLE A2 - 3

EQUIPMENT	MCC	0 -60s	1 -10 MIN	10-30 MIN	30-240MIN
HV-E51-1F045	1D254	0	0	0	0
HV-E51-1F013	1D254	42.2	0	0	0
HV-E51-1F046	1D254	0	0	0	0
FV-E51-1F019	1D254	0	0	0	0
1P219	1D254	11.2	11.2	11.2	11.2
1P125B	1D155	87.2	37.9	37.9	0
1P125C	1D155	87.2	37.9	37.9	0
1P155A	1D155	0	4	4	0
1P110	1D155	144.1	73.3	73.3	0
1D656	1D656	332	332	332	0
HV-E51-1F031	1D254	4	0	0	0
HV-E51-1F010	1D254	0	4	0	0
1P220	1D254	24.8	13.4	13.4	13.4
HV-E41-1F079	1D254	0	0	0	0
HV-E51-1F062	1D254	0	0	0	0
HV-E51-1F008	1D254	0	0	0	0
HV-E51-1F022	1D254	23	0	0	0
TOTAL		755.7	513.7	509.7	24.6
1D656		332	332	332	0
1D155		318.5	153.1	153.1	0
1D254		105.2	28.6	24.6	24.6

STATION BLACKOUT - 1D650 LOAD PROFILE
CURRENT CALCULATED AT 250 VDC

EQUIPMENT	MCC	0 -60s	1 - 5 IMN	5 - 6 MIN	6 - 10 MIN	10 - 30 MIN	30-240MIN
HV-E51-1F045	1D254	8	42.2	8	0	0	0
HV-E51-1F013	1D254	42.2	42.2	42.2	0	0	0
HV-E51-1F046	1D254	7.8	0.7	7.8	0	0	0
FV-E51-1F019	1D254	26.4	0	26.4	0	0	0
1P219	1D254	23.7	11.2	11.2	11.2	11.2	11.2
1P125B	1D155	87.2	37.9	37.9	37.9	37.9	0
1P125C	1D155	87.2	37.9	37.9	37.9	37.9	0
1P155A	1D155	0	4	4	4	4	0
1P110	1D155	144.1	73.3	73.3	73.3	73.3	0
1D650	1D650	332	332	332	332	332	0
HV-E51-1F031	1D254	0	0	0	0	0	0
HV-E51-1F010	1D254	0	0	0	0	0	0
1P220	1D254	24.8	13.4	24.8	13.4	13.4	13.4
HV-E41-1F079	1D254	0	0	0	0	0	0
HV-E51-1F062	1D254	0	0	0	0	0	0
HV-E51-1F008	1D254	0	0	0	0	0	0
TOTAL		783.4	594.8	605.5	509.7	509.7	24.6
1D650		332	332	332	332	332	0
1D155		318.5	153.1	153.1	153.1	153.1	0
1D254		132.9	109.7	120.4	24.6	24.6	24.6

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ATTACHMENT 3

1D650

AMPERE-HOURS

The AMPERE-HOURS 1D650 is required to deliver are calculated using the load profiles from Attachment 2. This assures variations in the timing of the MOVs are enveloped.

1D650 BATTERY VOLTAGE AT THE END OF 4 HOURS AT RATED CURRENT AND VOLTAGE LARGE BREAK LOCA

(1) Actual Load (AMPS)	(2) Corrected Load (AMPS) (1) X 1.3875*	(3) Elapsed Time (Min)	(4) Total AMP-HRS Removed
788	1094	1	18.2
584	811	10	139.7
510	708	30	375.7
25	35	240	498.2

1D650 BATTERY VOLTAGE AT THE END OF 4 HOURS AT RATED CURRENT AND VOLTAGE LARGE BREAK LOCA RCIC IN PRESSURE CONTROL

(1) Actual Load (AMPS)	(2) Corrected Load (AMPS) (1) X 1.3875*	(3) Elapsed Time (Min)	(4) Total AMP-HRS Removed
756	1049	1	17.5
584	811	10	139.2
510	708	30	375.2
25	35	240	497.7

* Corrected Load = (Temperature Correction)(Age Correction)

= (1.11)(1.25) = 1.3875

Temperature Correction = 1.11 for 60°F(From IEEE 485)

Age Correction = 1.25 (IEEE 485)

1D650 BATTERY VOLTAGE AT THE END OF 4 HOURS AT RATED CURRENT AND VOLTAGE SMALL BREAK LOCA

(1) Actual Load (AMPS)	(2) Corrected Load (AMPS) (1) X 1.3875*	(3) Elapsed Time (Min)	(4) Total AMP-HRS Removed
788	1094	1	18.2
514	713	10	125.2
510	708	30	361.2
25	35	240	483.7

1D650 BATTERY VOLTAGE AT THE END OF 4 HOURS AT RATED CURRENT AND VOLTAGE SMALL BREAK LOCA RCIC IN PRESSURE CONTROL

(1) Actual Load (AMPS)	(2) Corrected Load (AMPS) (1) X 1.3875*	(3) Elapsed Time (Min)	(4) Total AMP-HRS Removed
756	1049	1	17.5
514	713	10	124.5
510	708	30	360.5
25	35	240	484.0

* Corrected Load = (Temperature Correction)(Age Correction)

= (1.11)(1.25) = 1.3875

Temperature Correction = 1.11 for 60°F(From IEEE 485)

Age Correction = 1.25 (IEEE 485)

1D650 BATTERY VOLTAGE AT THE END OF 4 HOURS AT RATED CURRENT AND VOLTAGE STATION BLACKOUT

(1) Actual Load (AMPS)	(2) Corrected Load (AMPS) (1) X 1.3875*	(3) Elapsed Time (Min)	(4) Total AMP-HRS Removed
784	1088	1	18.1
595	826	5	73.2
606	841	6	87.3
510	708	30	370.5
25	35	240	493.0

1D650 BATTERY VOLTAGE AT THE END OF 4 HOURS AT RATED CURRENT AND VOLTAGE EXISTING TECH SPECS

(1) Actual Load (AMPS)	(2) Corrected Load (AMPS) (1) X 1.3875*	(3) Elapsed Time (Min)	(4) Total AMP-HRS Removed
1120	1554	1	25.9
599	831	10	115.8
599	831	30	392.8
99	138	120	599.8
27	38	240	675.8

* Corrected Load = (Temperature Correction)(Age Correction)

= (1.11)(1.25) = 1.3875

Temperature Correction = 1.11 for 60°F(From IEEE 485)

1D650 BATTERY VOLTAGE AT THE END OF 4 HOURS AT RATED CURRENT AND VOLTAGE PROPOSED TECH SPEC

(1) Actual Load (AMPS)	(2) Corrected Load (AMPS) (1) X 1.3875*	(3) Elapsed Time (Min)	(4) Total AMP-HRS Removed
800	1110	1	18.5
610	847	10	145.6
535	742	30	392.9
27	38	240	525.9

* Corrected Load = (Temperature Correction)(Age Correction)

= (1.11)(1.25) = 1.3875

Temperature Correction = 1.11 for 60°F(From IEEE 485)

Age Correction = 1.25 (IEEE 485)

ATTACHMENT 4

1D650

MINIMUM BATTERY TERMINAL

VOLTAGE

1D650
CALCULATE
MINIMUM REQUIRED BATTERY TERMINAL VOLTAGE

The minimum required battery terminal voltage is the voltage required at the END OF DISCHARGE to support the connected load per IEEE 485-1978. This voltage is the minimum Technical Specification voltage requirement.

1.0 The Resistance between the Load Center and MCCs are:

Battery to Load Center = 0.0027 Ω (From E-AAA-255)

Load Center to 1D254 = 0.0113 Ω (From E-AAA-255)

Load Center to 1D155 = 0.0143 Ω (From E-AAA-255)

Load Center to 1D656 = 0.012 Ω (From E-AAA-255)

2.0 Determine the voltage at the Load Center while maintaining 210 VDC at the Class 1E MCC for the END OF DISCHARGE Load Segment of Battery 1D650 (30 -240 Minutes).

2.1 **1D254**

The Proposed Technical Specification Profile for the 30 - 240 minute segment is 27 amperes. The largest calculated Class 1E load on 1D254 is 24.6 A (From Attachment 2) and the largest calculated battery load profile is 24.6 amperes (From Attachment 2). The 2.4 ampere differences between the two profiles is added to the Class 1E MCC 1D254.

$I_{1D254} = 27$ A

$V_{LC} = 210 + V_{DROP} = 210 + (0.0113)(27) = 210.31$ V

2.2 **1D155**

The Proposed Technical Specification Profile for the 30 - 240 minute segment is 27 amperes. The largest calculated load on 1D155 is 0 A (From Attachment 2) and the largest calculated battery load profile is 24.6 amperes (From Attachment 2). The 2.4 ampere differences between the two profiles is added to the 1D155.

$I_{1D155} = 2.4$ A

$V_{LC} = 210 + V_{DROP} = 210 + (0.0143)(2.4) = 210.1$ V

2.3 **1D656**

The Proposed Technical Specification Profile for the 30 - 240 minute segment is 27 amperes. The largest calculated load on 1D656 is 0 A (From Attachment 2) and the largest calculated battery load profile is 24.6 amperes (From Attachment 2). The 2.4 ampere differences between the two profiles is added to the 1D656.

$I_{1D656} = 2.4$ A

$V_{LC} = 210 + V_{DROP} = 210 + (0.012)(2.4) = 210.1$ V

3.0 Determine the Battery Terminal Voltage to maintain 210 VDC at the Class 1E MCCs for the END OF DISCHARGE Load Segment of Battery 1D650.

$V_{BATTERY} = V_{LC} + V_{Drop\ Batt\ to\ LC}$

Use the Load Center voltage required to maintain 210 V at MCC 1D254

$I_{1D254} = 27$ A

$V_{BATTERY} = 210.31$ V + (27)(0.0027)

= **210.4 V**

4.0 Determine the Volts per cell that must be used in sizing the Class 1E 120 cell battery in order to maintain a battery voltage of 210.4 at END OF DISCHARGE.

VPC = 210.4/120 = 1.753

USE 1.76 VPC

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ATTACHMENT 5

INRUSH CURRENT CALCULATION FOR 1P125B, 1P125C & 1P110

ATTACHMENT 5

The purpose of this calculation is to calculate the inrush current for 1P125B, 1P125C and 1P110 based upon speed when the starting resistors are shorted.

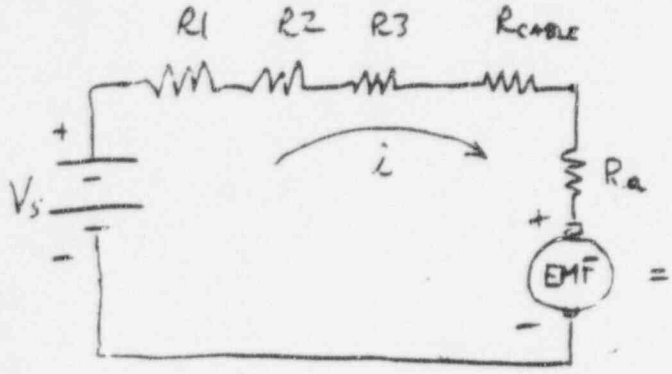
The equations on the following pages were programmed into MicroSoft Excel PC based program.

The only assumption used in this calculation is that the motor Horsepower (HP) is proportional to the square of the speed. This is based upon:

Head is proportional to speed

Flow is proportional to speed

$HP = (Head)(Flow) = K(Speed^2)$



$= K\omega$, ω = speed
ω_0 = rated speed

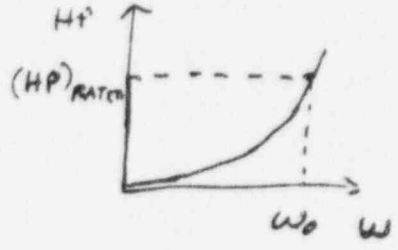
$$746\,(HP)_{RATED} = (V)_{RATED}\,(i)_{RATED} - (i)^2_{RATED}\,Ra$$

$$(R_a)_{CALC.} = \frac{(V)_{RATED}}{(i)_{RATED}} - \frac{(HP)_{RATED} \times 746}{(i)^2_{RATED}}$$

$$\omega_0 K = (V)_{RATED} - (i)_{RATED}\,(R_a)_{CALC}$$

$$K = \frac{(V)_{RATED} - (i)_{RATED}\,(R_a)_{CALC}}{\omega_0}$$

$$HP = (HP)_{RATED} \times \left(\frac{\omega}{\omega_0}\right)^2$$



$$V_s - i R_T = EMF \qquad R_T \text{ - total ckt resist}$$

$$i \times EMF = i K\omega = 746(HP) = 746(HP)_{RATED} \times \left(\frac{\omega}{\omega_0}\right)^2$$

$$\therefore \quad i = \frac{746(HP)_{RATED}\ \omega}{K\omega_0^2}$$

$$\omega = \frac{V_s K \omega_0^2}{K^2\omega_0^2 + 746(HP)_{RATED} R_T}$$

1P125B
D.C. MOTOR STARTING WITH ONE (1) STARTING RESISTOR

	A	B	C	D	E	F
1	RATED HP	10.00				
2	RATED VOLTS	240.00				
3	RATED CURRENT (AMPS)	36.00				
4	RATED SPEED (RPM)	3500.00				
5	STARTING R1 (OHMS)	1.8000				
6	STARTING R2 (OHMS)	0.0000				
7	STARTING R3 (OHMS)	0.0000				
8	CABLE RESIST. (OHMS)	0.1560				
9	SOURCE VOLTS	250.00				
10	MEASURED ARMATURE RESIST. (OHMS)	0.0000				
11	ROTOR CONSTANT "K" (VOLTS/RPM)	0.0592				
12	CALC. ARMATURE RESIST. (OHMS)	0.9105				
13						
14		SPEED	ROTOR EMF	CURRENT	MECH. HP	ELEC. HP
15	STEP 1-INRUSH (R1 + R2 + R3)	0.00	0.00	87.21	0.00	0.00
16	STEP 2-RUNNING (R1 + R2 + R3)	2818.80	166.89	28.99	6.49	6.49
17	STEP 3-INRUSH (R2 + R3)	2818.80	166.89	77.93	6.49	17.43
18	STEP 4-RUNNING (R2 + R3)	3562.47	210.92	36.64	10.36	10.36
19	STEP 5-INRUSH (R3)	3562.47	210.92	36.64	10.36	10.36
20	STEP 6-RUNNING (R3)	3562.47	210.92	36.64	10.36	10.36
21	STEP 7-INRUSH (NO STARTING RESIST.)	3562.47	210.92	36.64	10.36	10.36
22	STEP 8-RUNNING (NO STARTING RESIST.)	3562.47	210.92	36.64	10.36	10.36

	A	B	C	D	E	F
1	RATED HP	10.00				
2	RATED VOLTS	240.00				
3	RATED CURRENT (AMPS)	36.00				
4	RATED SPEED (RPM)	3500.00				
5	STARTING R1 (OHMS)	1.8000				
6	STARTING R2 (OHMS)	0.0000				
7	STARTING R3 (OHMS)	0.0000				
8	CABLE RESIST. (OHMS)	0.1550				
9	SOURCE VOLTS	250.00				
10	MEASURED ARMATURE RESIST. (OHMS)	0.0000				
11	ROTOR CONSTANT "K" (VOLTS/RPM)	0.0592				
12	CALC. ARMATURE RESIST. (OHMS)	0.9105				
13						
14		SPEED	ROTOR EMF	CURRENT	MECH. HP	ELEC. HP
15	STEP 1-INRUSH (R1 + R2 + R3)	0.00	0.00	87.24	0.00	0.00
16	STEP 2-RUNNING (R1 + R2 + R3)	2819.12	166.91	29.00	6.49	6.49
17	STEP 3-INRUSH (R2 + R3)	2819.12	166.91	77.98	6.49	17.45
18	STEP 4-RUNNING (R2 + R3)	3562.99	210.95	36.65	10.36	10.36
19	STEP 5-INRUSH (R3)	3562.99	210.95	36.65	10.36	10.36
20	STEP 6-RUNNING (R3)	3562.99	210.95	36.65	10.36	10.36
21	STEP 7-INRUSH (NO STARTING RESIST.)	3562.99	210.95	36.65	10.36	10.36
22	STEP 8-RUNNING (NO STARTING RESIST.)	3562.99	210.95	36.65	10.36	10.36

	A	B	C	D	E	F
1	RATED HP	20.00				
2	RATED VOLTS	240.00				
3	RATED CURRENT (AMPS)	71.00				
4	RATED SPEED (RPM)	2500.00				
5	STARTING R1 (OHMS)	0.7000				
6	STARTING R2 (OHMS)	0.5500				
7	STARTING R3 (OHMS)	0.0000				
8	CABLE RESIST. (OHMS)	0.0640				
9	SOURCE VOLTS	250.00				
10	MEASURED ARMATURE RESIST. (OHMS)	0.0000				
11	ROTOR CONSTANT "K" (VOLTS/RPM)	0.0841				
12	CALC. ARMATURE RESIST. (OHMS)	0.4206				
13						
14		SPEED	ROTOR EMF	CURRENT	MECH. HP	ELEC. HP
15	STEP 1-INRUSH (R1 + R2 + R3)	0.00	0.00	144.13	0.00	0.00
16	STEP 2-RUNNING (R1 + R2 + R3)	1875.22	157.62	53.26	11.25	11.25
17	STEP 3-INRUSH (R2 + R3)	1875.22	157.62	89.29	11.25	18.87
18	STEP 4-RUNNING (R2 + R3)	2203.85	185.25	62.59	15.54	15.54
19	STEP 5-INRUSH (R3)	2203.85	185.25	133.63	15.54	33.18
20	STEP 6-RUNNING (R3)	2555.78	214.83	72.58	20.90	20.90
21	STEP 7-INRUSH (NO STARTING RESIST.)	2555.78	214.83	72.58	20.90	20.90
22	STEP 8-RUNNING (NO STARTING RESIST.)	2555.78	214.83	72.58	20.90	20.90