ATTACHMENT 2

1D660

WORST CASE LOAD PROFILE

BASED ON THE THEORETICAL MAXIMUM

EQUIPMENT THAT

COULD START SIMULTANEOUSLY

Using the 1D660 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 1D660 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 1D660 Battery Load Profile for a LARGE BREAK LOCA with all equipment starting simultaneously.

1.1 0 - 60 seconds

The 50 - 50.5 second time segment from Attachment 1 was used to develop the maximum possible 1D660 load due to simultaneous equipment starts since this segment is the heaviest loaded time segment.

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

1.11 HV-E41-1F084 inrush amperes are not used since HV-E41-1F084 starts on Reactor Low Pressure (61.2 psig) which occurs after the simultaneous starting of equipment.

1.2 1 - 10 Minute ⚠

1.21 HV-E41-1F004 inrush amperes are not used since HV-E41-1F042 must be fully open before HV-E41-1F004 can close. This occurs after the simultaneous equipment start.

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 HPCI IN PRESSURE CONTROL PROFILE

The Table A2 - 2 shows the maximum possible 1D660 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 HV-B21-1F019 and HV-G33-1F004 inrush amperes are not use since HV-B21-1F019 and HV-G33-1F004 start on Reactor Low Level-2 signal while the equipment that starts simultaneously starts on High Drywell Pressure.

2.12 1P155B inrush amperes are not used since this motor has a 6 second definite time timer which prevents simultaneous starting with the other equipment.

2.13 HV-E41-1F003 inrush amperes are not used since Reactor Pressure MUST drop to 105.5 psi before HV-E41-1F003 can operate. This occurs after all the equipment in this load segment has started.

2.2 1 - 10 Minute 

2.21 HV-E41-1F042 and HV-E41-1F004 inrush amperes are not used since HV-E41-1F042 must be fully open before HV-E41-1F004 can close.

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 1D660 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-E41-1F001 inrush amperes are not used since HV-E41-1F001 MUST BE out of Locked Rotor before HV-E41-1F006 can be started.

3.12 1P155B 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-E41-1F012 inrush amperes are not used since HV-E41-1F012 starts on HPCI Turbine High Steam Pressure which occurs after the equipment that starts simultaneously has started.

3.14 1P112 inrush amperes are not used since 1P112 does not start until the Main Turbine has slowed down enough to result in low oil pressure. This occurs after the equipment that starts simultaneously has started.

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 HPCI IN PRESSURE CONTROL PROFILE

The Table A2 - 4 shows the maximum possible 1D660 Battery Load Profile for a SMALL BREAK LOCA RCIC IN PRESSURE CONTROL with all equipment starting simultaneously.

4.1 0 - 60 seconds

4.11 1P155B inrush amperes are not used since this motor has a 6 second definite time timer which 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 1D660 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-E41-1F001 inrush amperes are not use since HV-E41-1F001 MUST BE out of Locked Rotor before HV-E41-1F006 can be started.

5.12 HV-E41-1F012 inrush amperes are not used since HV-E41-1F012 starts on HPCI Turbine High Steam Pressure which occurs after the equipment that starts simultaneously has started.

5.13 1P112 inrush amperes are not used since 1P112 does not start until the Main Turbine has slowed down enough to result in low oil pressure. This occurs after the equipment that starts simultaneously has started.

5.2 1 - 5 Minute

All the equipment in this load segment operates simultaneously.

5.3 5 - 6 Minute

5.31 HV-E41-1F059 inrush amperes are not used since HV-E41-1F059 MUST BE manually opened before the other equipment started in this time segment can start.

5.31 HV-E41-1F011 inrush amperes are not used since HV-E41-1F011 MUST BE manually opened before the other equipment started in this time segment can start.

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.

EQUIPMENT	MCC		0 - 60s		1 - 10 MIN		10-30 MIN		30-240MIN							
HV-E41-1F001	1D264		0		0		0		0							
HV-E41-1F006	1D264		208.1		0		0		0							
HV-E41-1F059	1D264		7.8		7.8		0		0							
HV-E41-1F075	1D264		4		0		0		0							
HV-E51-1F084	1D264		0		10.3		0		0							
HV-E41-1F012	1D264		0		0		0		0							
HV-E41-1F042	1D264		19.3		19.3		0		0							
HV-E41-1F004	1D264		0		0		0		0							
HV-E41-1F003	1D264		83.9		83.9		0		0							
1P213	1D274		0		0		0		0							
1P216	1D274		6.2		6.2		6.2		6.2							
HV-B21-1F019	1D274		0		0		0		0							
HV-G33-1F004	1D274		0		0		0		0							
1P215	1D274		23		11.4		11.4		11.4							
1P125A	1D165		37.9		37.9		37.9		0							
1P155B	1D165		4		4		4		0							
1P112	1D165		340.1		140.1		140.1		0							
1D666	1D166		131		131		131		131							
TOTAL			863.3		451.9		330.6		148.6							
1D666			131		131		131		131							
1D165			382		182		182		0							
1D264			321.1		121.3		0		0							
1D274			29.2		17.6		17.6		17.6							

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EQUIPMENT	MCC		0 - 60s		1 - 10 MIN		10-30 MIN		30-240MIN						
HV-E41-1F001	1D264		0		0		0		0						
HV-E41-1F006	1D264		206.1		0		0		0						
HV-E41-1F059	1D264		0		7.8		0		0						
HV-E41-1F075	1D264		0		0		0		0						
HV-E51-1F084	1D264		0		10.3		0		0						
HV-E41-1F012	1D264		0		0		0		0						
HV-E41-1F042	1D264		19.3		2.1		0		0						
HV-E41-1F004	1D264		0		19.3		0		0						
HV-E41-1F003	1D264		0		83.9		0		0						
HV-E41-1F011	1D264		99.6		0		0		0						
1P213	1D274		0		0		0		0						
1P216	1D274		6.2		6.2		6.2		6.2						
HV-B21-1F019	1D274		0		0		0		0						
HV-G33-1F004	1D274		0		0		0		0						
HV-E41-1F008	1D274		123.2		0		0		0						
1P215	1D274		23		11.4		11.4		11.4						
1P125A	1D165		87.1		37.9		37.9		0						
1P155B	1D165		0		4		4		0						
1P112	1D165		340.2		140.1		140.1		0						
1D666	1D166		131		131		131		131						
TOTAL			1035.7		454		330.6		148.6						
1D666			131		131		131		131						
1D165			427.3		182		182		0						
1D264			325		123.4		0		0						
1D274			152.4		17.6		17.6		17.6						

SMALL BREAK LOCA - 1D660 LOAD PROFILE
CURRENTS CALCULATED AT 250 VDC

EQUIPMENT	MCC		0 -60s		1 - 10 MIN		10-30 MIN		30-240MIN						
HV-E41-1F001	1D264		18		0		0		0						
HV-E41-1F006	1D264		206.1		0		0		0						
HV-E41-1F059	1D264		7.8		0		0		0						
HV-E41-1F075	1D264		0		0		0		0						
HV-E51-1F084	1D264		0		0		0		0						
HV-E41-1F012	1D264		0		0		0		0						
HV-E41-1F042	1D264		19.3		2.1		0		0						
HV-E41-1F004	1D264		0		19.3		0		0						
HV-E41-1F003	1D264		0		0		0		0						
1P213	1D274		70.8		0		0		0						
1P216	1D274		11.7		6.2		6.2		6.2						
HV-B21-1F019	1D274		0		0		0		0						
HV-G33-1F004	1D274		0		0		0		0						
1P215	1D274		23		11.4		11.4		11.4						
1P125A	1D165		87.1		37.9		37.9		0						
1P155B	1D165		0		4		4		0						
1P112	1D165		0		140.1		140.1		0						
1D666	1D166		131		131		131		131						
TOTAL			574.8		352		330.6		148.6						
1D666			131		131		131		131						
1D165			87.1		182		182		0						
1D264			251.2		21.4		0		0						
1D274			105.5		17.6		17.6		17.6						

SMALL BREAK LOCA HPCI IN PRESSURE CONTROL - 1D660 LOAD PROFILE
CURRENTS CALCULATED AT 250 VDC

EQUIPMENT	MCC	0 - 60 s	1 - 10 MIN	10-30 MIN	30-240MIN
HV-E41-1F001	1D264	0	0	0	0
HV-E41-1F006	1D264	206.1	0	0	0
HV-E41-1F059	1D264	0	0	0	0
HV-E41-1F075	1D264	0	0	0	0
HV-E51-1F084	1D264	0	0	0	0
HV-E41-1F012	1D264	0	0	0	0
HV-E41-1F042	1D264	19.3	2.1	0	0
HV-E41-1F004	1D264	0	19.3	0	0
HV-E41-1F0011	1D264	99.6	0	0	0
1P213	1D274	0	0	0	0
HV-E41-1F008	1D274	123.2	0	0	0
1P216	1D274	6.2	6.2	6.2	6.2
HV-B21-1F019	1D274	0	0	0	0
HV-G33-1F004	1D274	0	0	0	0
1P215	1D274	23	11.4	11.4	11.4
1P125A	1D165	87.1	37.9	37.9	0
1P155B	1D165	0	4	4	0
1P112	1D165	340.1	140.1	140.1	0
1D666	1D166	131	131	131	131
TOTAL		1035.6	352	330.6	148.6
1D666		131	131	131	131
1D165		427.2	182	182	0
1D264			21.4	0	0
1D274		15	17.6	17.6	17.6

1D660SBP.XLS

TABLE A2 - 4

EQUIPMENT	MCC		0 - 60s		1 - 5 MIN		5 - 6 MIN		6 - 10 MIN		10-30 MIN		30-240MIN		
HV-E41-1F001	1D264		18		0		0		0		0		0		
HV-E41-1F006	1D264		206.1		206.1		0		0		0		0		
HV-E41-1F059	1D264		7.8		7.8		0		0		0		0		
HV-E41-1F012	1D264		0		0		38.2		0		0		0		
HV-E41-1F042	1D264		0		0		0		0		0		0		
HV-E41-1F004	1D264		0		0		0		0		0		0		
HV-E41-1F011	1D264		0		0		0		0		0		0		
HV-E41-1F003	1D264		0		0		0		0		0		0		
1P213	1D274		70.8		0		70.8		0		0		0		
1P216	1D274		11.7		6.2		6.2		6.2		6.2		6.2		
HV-B21-1F019	1D274		26.4		0		0		0		0		0		
HV-G33-1F004	1D274		38.2		0		0		0		0		0		
HV-E31-1F008	1D1274		0		0		123.2		0		0		0		
1P215	1D274		0		23		11.4		11.4		11.4		11.4		
1P125A	1D165		87.1		37.9		37.9		37.9		37.9		0		
1P155B	1D165		14.4		4		4		4		4		0		
1P112	1D165		0		140.1		140.1		140.1		140.1		0		
1D666	1D166		131		131		131		131		131		131		
TOTAL			611.5		556.1		562.8		330.6		330.6		148.6		
1D666			131		131		131		131		131		131		
1D165			101.5		182		182		182		182		0		
1D264			231.9		213.9		38.2		0		0		0		
1D274			147.1		29.2		211.6		17.6		17.6		17.6		

ATTACHMENT 3

1D660

AMPERE-HOURS

The AMPERE-HOURS 1D660 is required to deliver are calculated using the load profiles from Attachment 2. This assures variations in the timing of the MOVs are enveloped.

1D660 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
864	1199	1	20.0
452	583	10	114.1
331	460	30	267.5
149	207	240	992.0

1D660 BATTERY VOLTAGE AT THE END OF 4 HOURS AT RATED CURRENT AND VOLTAGE LARGE BREAK LOCA HPCI IN PRESSURE CONTROL

(1) Actual Load (AMPS)	(2) Corrected Load (AMPS) (1) X 1.3875	(3) Elapsed Time (Min)	(4) Total AMP-HRS Removed
1036	1438	1	24.0
454	630	10	118.5
331	460	30	271.9
149	207	240	996.4

* 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)

1D660 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
575	798	1	13.3
352	489	10	86.7
331	460	30	240.1
149	207	240	964.6

1D660 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
1036	1438	1	24.0
352	489	10	97.4
331	460	30	250.8
149	207	240	975.3

* 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)

1D660 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
611	848	1	14.1
550	772	5	65.6
563	781	6	78.7
331	460	30	262.7
149	207	240	987.2

1D660 BATTERY VOLTAGE AT THE END OF 4 HOURS AT RATED CURRENT AND VOLTAGE PROPOSED TECHNICAL SPECIFICATION

(1) Actual Load (AMPS)	(2) Corrected Load (AMPS) (1) X 1.3875	(3) Elapsed Time (Min)	(4) Total AMP-HRS Removed
1040	1443	1	24.1
575	798	10	143.8
350	486	30	305.8
175	243	240	1156.3

* 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)

1D660 BATTERY VOLTAGE AT THE END OF 4 HOURS AT RATED CURRENT AND VOLTAGE EXISTING TECHNICAL SPECIFICATION

(1) Actual Load (AMPS)	(2) Corrected Load (AMPS) (1) X 1.3875	(3) Elapsed Time (Min)	(4) Total AMP-HRS Removed
887	1231	1	20.5
396	550	10	103
366	508	30	441.7
325	451	120	1118.2
187	260	239	1633.9
229	318	240	1639.2

* 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

1D660

MINIMUM BATTERY TERMINAL

VOLTAGE

1D660
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 1D264	=	0.0147 Ω (From E-AAA-255)
Load Center to 1D274	=	0.0142 Ω (From E-AAA-255)
Load Center to 1D165	=	0.0144 Ω (From E-AAA-255)
Load Center to 1D666	=	0.009 Ω (From E-AAA-255)

Determine the voltage at the Load Center while maintaining 210 VDC at the MCCs for the END OF DISCHARGE Load Segment of Battery 1D660 (30 -240 Minutes).

2.1 **1D264**

The Proposed Technical Specification Profile for the 30 - 240 minute segment is 175 amperes. The largest calculated Class 1E load on 1D264 is 0 A (From Attachment 2) and the largest calculated battery load profile is 148.6 amperes (From Attachment 2). The 26.4 ampere differences between the two profiles is added to the Class 1E MCC 1D264.

$I_{1D264} = 26.4$ A

$V_{LC} = 210 + V_{DROP} = 210 + (0.0147)(26.4) = 210.4$ V

2.2 **1D274**

The Proposed Technical Specification Profile for the 30 - 240 minute segment is 175 amperes. The largest calculated Class 1E load on 1D274 is 17.6 A (From Attachment 2) and the largest calculated battery load profile is 148.6 amperes (From Attachment 2). The 26.4 ampere differences between the two profiles is added to the Class 1E MCC 1D274.

$I_{1D274} = (17.6A + 26.4A) = 44$ A

$V_{LC} = 210 + V_{DROP} = 210 + (0.0142)(44) = 210.6$ V

2.3 **1D666**

The Proposed Technical Specification Profile for the 30 - 240 minute segment is 175 amperes. The largest calculated load on 1D666 is 131 A (From Attachment 2) and the largest calculated battery load profile is 148.6 amperes (From Attachment 2). The 26.4 ampere differences between the two profiles is added to the 1D666.

I_{1D666} = (131A + 26.4A) = 157.4 A

V_{LC} = 210 + V_{DROP} = 210 + (0.009)(157.4) = 211.4 V

2.4 **1D165**

The Proposed Technical Specification Profile for the 30 - 240 minute segment is 175 amperes. The largest calculated load on 1D165 is 0 A (From Attachment 2) and the largest calculated battery load profile is 148.6 amperes (From Attachment 2). The 26.4 ampere differences between the two profiles is added to the 1D165.

I_{1D165} = 26.4 A

V_{LC} = 210 + V_{DROP} = 210 + (0.0144)(26.4) = 210.4 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 1D660.

Use the Load Center voltage required to maintain 210 V at 1D666 since this voltage requires the higher battery voltage.

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

I = 175 A

$V_{BATTERY}$ = 211.4 V + (175)(0.0027)

= **211.9 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 211.9 at END OF DISCHARGE.

VPC = 211.9/120 = 1.766

USE 1.77 VPC

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ATTACHMENT 5

INRUSH CURRENT CALCULATION FOR 1P125A & 1P112

ATTACHMENT 5

The purpose of this calculation to the calculate the inrush current for 1P125A and 1P112 with starting resistors based upon speed of the motors when the starting resistors are shorted.

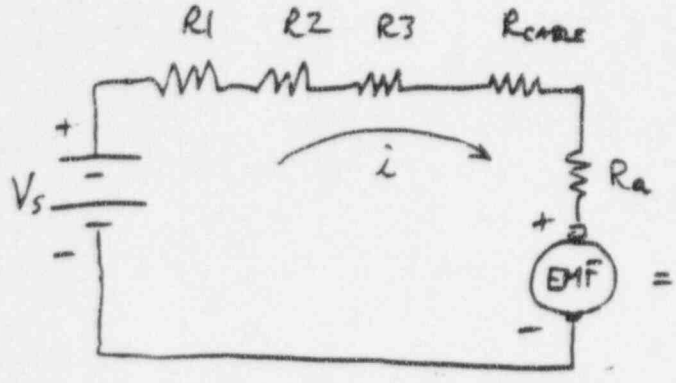
The equations on the following pages were programmed into MicroSoft Excel PC based program.

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

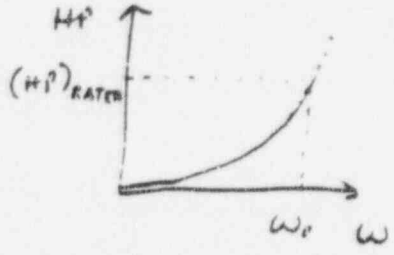
$$746\,(HP)_{RATED} = (V)_{RATED}\,(i)_{RATED} - (i)^2_{RATED}\,R_a$$

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

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

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

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



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

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

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

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

	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)	0.1600				
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	87.09	0.00	0.00
16	STEP 2-RUNNING (R1 + R2 + R3)	2817.49	166.81	28.98	6.48	6.48
17	STEP 3-INRUSH (R2 + R3)	2817.49	166.81	77.71	6.48	17.38
18	STEP 4-RUNNING (R2 + R3)	3560.38	210.80	36.62	10.35	10.35
19	STEP 5-INRUSH (R3)	3560.38	210.80	36.62	10.35	10.35
20	STEP 6-RUNNING (R3)	3560.38	210.80	36.62	10.35	10.35
21	STEP 7-INRUSH (NO STARTING RESIST.)	3560.38	210.80	36.62	10.35	10.35
22	STEP 8-RUNNING (NO STARTING RESIST.)	3560.38	210.80	36.62	10.35	10.35

	A	B	C	D	E	F
1	RATED HP	40.00				
2	RATED VOLTS	240.00				
3	RATED CURRENT (AMPS)	137.00				
4	RATED SPEED (RPM)	1800.00				
5	STARTING R1 (OHMS)	0.3500				
6	STARTING R2 (OHMS)	0.1900				
7	STARTING R3 (OHMS)	0.0000				
8	CABLE RESIST. (OHMS)	0.0300				
9	SOURCE VOLTS	250.00				
10	MEASURED ARMATURE RESIST. (OHMS)	0.0000				
11	ROTOR CONSTANT "K" (VOLTS/RPM)	0.1210				
12	CALC. ARMATURE RESIST. (OHMS)	0.1620				
13						
14		SPEED	ROTOR EMF	CURRENT	MECH. HP	ELEC. HP
15	STEP 1-INRUSH (R1 + R2 + R3)	0.00	0.00	341.54	0.00	0.00
16	STEP 2-RUNNING (R1 + R2 + R3)	1414.69	171.19	107.67	24.71	24.71
17	STEP 3-INRUSH (R2 + R3)	1414.69	171.19	206.34	24.71	47.35
18	STEP 4-RUNNING (R2 + R3)	1665.80	201.57	126.79	34.26	34.26
19	STEP 5-INRUSH (R3)	1665.80	201.57	252.27	34.26	68.16
20	STEP 6-RUNNING (R3)	1843.43	223.07	140.31	41.95	41.95
21	STEP 7-INRUSH (NO STARTING RESIST.)	1843.43	223.07	140.31	41.95	41.95
22	STEP 8-RUNNING (NO STARTING RESIST.)	1843.43	223.07	140.31	41.95	41.95