

REFERENCES

- Ahuja, H. N. Construction performance control by networks. New York: John Wiley and Sons, 1976.
- Burke, R. Project management: Planning and control. 2nd ed. Chichester: John Wiley and Sons, 1996.
- Clough, R. H., and Sears, G. A. Construction project management. 2nd ed. New York: John Wiley and Sons, 1979.
- Harrison, F. L. Advanced project management: A structured approach. 3rd ed. Hants: Gower Publishing, 1993.
- Leavitt, J. S., and Nunn, P. C. Total quality through project management. New York: McGraw-Hill, 1994.
- Lock, D. Project management. 5th ed. Hants: Gower Publishing, 1992.
- Lockyer, K.G. An introduction to critical path analysis. 3rd ed. London: Pitman Publishing, 1975.
- Lockyer, K.G. Production control in practice. 2nd ed. London: Pitman Publishing, 1975.
- Meredith, J. R., and Mantel, M. J., Jr. Project management: A managerial approach. 3rd ed. New York: John Wiley and Sons, 1995.
- Moder, J. J., Phillips, C. R., and Davis, E. W. Project management with CPM, PERT and precedence diagramming. 3rd ed. New York: Van Nostrand Reinhold, 1983.
- Pilcher, R. Principles of construction management. 2nd ed. London: McGraw-Hill, 1967.
- Reiss, G. Project management demystified: Today's tools and techniques. 2nd ed. London: E & FN Spon, 1995.

Schoderbek, P. P., and Digman, L. A. Third generation, PERT/LOB. Managing Projects & Programs Series: The Magazine of Decision Maker No. 67512 (September-October 1967): 96-106.

Spinner, P. M. Project management: Principles and practices. Upper Saddle River: Prentice-Hall, 1997.

Turner, R. J. The handbook of project-based management: Improving the processes for achieving strategic objectives. London: McGraw-Hill, 1993.



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APPENDIX A
COMPUTER PROGRAM MANUAL

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COMPUTER PROGRAM MANUAL

Material Requirement Schedule (MRS), Production Schedule (PS) and Production Monitoring and Control (PMC) programs are developed with macro on Excel software. Macro algorithm is provided at the end of the program worksheets. While, the template of network planning model is established on Microsoft Project software.

Installation

All of these programs are compressed into .zip file to be stored in one diskette. Hence, it is necessary to decompress them before their applications.

- 1) Insert a disk containing .zip file
- 2) Type in "pkunzip <file name> .zip c:" this command will explode the hidden file within . zip file to drive C
- 3) Press Enter

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FACILITIES MANU IN MRS AND PMC PROGRAM

Protect worksheet (for MRS and PMC program)

Press Ctrl + Z

Unprotect worksheet (for MRS and PMC program)

Press Ctrl + X

Hide columns (for MRS and PMC program)

1. Click at top of column and drag to select required columns
2. Select *Columns* from *Facilities* menu
3. Select *Hide*

Unhide columns (for MRS and PMC program)

1. Click at top of column and drag to select required columns
2. Select *Columns* from *Facilities* menu
3. Select *UnHide*

Hide rows (for MRS and PMC program)

1. Click at head of row and drag to select required rows
2. Select *Rows* from *Facilities* menu
3. Select *Hide*

Unhide rows (for MRS and PMC program)

1. Click at head of row and drag to select required rows
2. Select *Rows* from *Facilities* menu
3. Select *UnHide*

**Build up ending point** (only for MRS program)

1. Click at the red cell in front of item list which is next to the last item
2. Select *Ending Point* from *Facilities* menu
3. Select *Build Up*, ending point will appear as black cell at selected cell

Cancel ending point (only for MRS program)

1. Click at ending point
2. Select *Ending Point* from *Facilities* menu
3. Select *Destroy*

Build up navigator (only for PMC program)

1. Click at required cell
2. Select *Navigator* from *Facilities* menu
3. Select *Build Up*, navigator will appear as red cell with text "Click Here to Update"

Cancel navigator (only for PMC program)

1. Click at navigator
2. Select *Navigator* from *Facilities* menu
3. Select *Destroy*, navigator will disappear

Move navigator forward (only for PMC program)

1. Click at navigator
2. Select *Navigator* from *Facilities* Menu
3. Select *Forward*

Move navigator backward (only for PMC program)

1. Click at navigator
2. Select *Navigator* from *Facilities* Menu
3. Select *Backward*

Build running bar (only for PMC program)

1. Click at head of required row
2. Select *Running Bar* from *Facilities* menu
3. Select *Build Up*, running bar will appear as blue strip along selected row

Cancel running bar (only for PMC program)

1. Click at head of row of running bar
2. Select *Running Bar* from *Facilities* menu
3. Select *Destroy*



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MRS PROGRAM

Build up material requirement schedule database

1) Copy file from MRS master program with the normal procedure by changing file name

2) Key information from Bill of Material (BOM) into database

2.1) Select *BOM* from *Sheets* menu, BOM worksheet will appear

2.2) Key project information and name of production centre of that database

into green area as follows:

CENTER [E4]

JOB No. [J4]

REQUISITION No. [E6]

PRODUCT [J6]

ORDER SIZE [E8]

BATCH SIZE [J8]

2.3) Key BOM information in green until complete every item as follows;

ITEM [C]	DESCRIPTION OF MATERIAL[D]	CLASS [E]
----------	----------------------------	-----------

CODE [F]	COUNT [G]	USAGE / UNIT [I]
----------	-----------	------------------

SCRAP RATE (%) [J]	REMARK [K]
--------------------	------------

3) Key materials status and required date into database

3.1) Select *MRS Database* from *Sheets* menu, MRS Database worksheet will appear

3.2) Key required date of each batch for that production centre into green area in row of **REQUIRED DATE**[11] by using information from Project Master Plan

3.3) Key the quantity of current stock into column of **CURRENT STOCK** [K], of required safety stock of into column of **SAFETY STOCK**[M] and of materials on delivery of each item batch by batch in the row of **SCHEDULE**

RECEIPT in green area until complete every item, by using information from purchasing division and warehouse.

- 4) Build up ending point with the procedure of Build up ending point
- 5) Update data of every item in database by selecting *MRS Update* from *Facilities* menu
- 6) Select *All Database* (if this command is selected without building ending point, program will up-date all database and consumes long time. However, it may be interrupted by pressing Ctrl + Pause Break)
- 7) Select *Save* from *File* menu to save file
- 8) Select *Close* from *File* menu to close file
- 9) Repeat step 1-8 for other production centres until completed

Revise material requirement schedule database by item

1) Revise data

1.1) In case that data about required date, current stock, safety stock or materials on delivery is required to be revised

1.1.1) Select *MRS Database* from *Sheets* menu, *MRS Database* worksheet will appear

1.1.2) Revise data of the required item in green area only one item at a time

1.2) In case that other data are required to be revised

1.2.1) Select *BOM* from *Sheets* menu

1.2.2) Revise data of the required item in green area only one item at a time

2) Update data

2.1) Select *MRS Database* from *Sheets* menu, *MRS Database* worksheet will appear

2.2) Click at red cell [B] in front of revised item

2.3) Select *MRS Update* from *Facilities* menu

2.4) Select *One Item*

3) Repeat step 1 to 2 for other required items until complete

4) Select *Save* from *File* menu to save database

Remarks :

In case of updating data without clicking red cell in front of item list at worksheet *MRS database*, program will show error. However, it can be corrected as follows:

1) Click *End* at warning dialogue box

2) In *MRS Database* worksheet, click at red cell in front of item which is required to update

3) Select *MRS Update* from *Facilities* menu

4) Select *One Item*

PMC PROGRAM and PS PROGRAM

Build up daily production schedule

1) Copy file from PMC master program with the normal procedure by changing file name

2) Key weight of each process

2.1) Select *Production Target* from *Over Views* menu

2.2) Select *Input Table*, *Production Target*(Table) worksheet will appear

2.3) Press *Ctrl + X* to cancel protection

2.4) Key weight of each process into green area of column *Weight[D]*

3) Set up working day of the company

3.1) Key working day of the company into green area of row *Date[6]* beginning in the first left cell as a few days before starting project in the project master plan to spare for starting project ahead of plan. Dates in the following cells will automatically change in sequence for instance project starting date on 12/3/97, 10/3/97 should be keyed in the first left cell. Date in following cells will be changed to 10,11, 12, 13, 14, 15, 16, 17, 18, 19, 20/3/97, ... respectively.

In case where 14-17/3/97 are non-working days, key 18/3/97 into cell which represents 14/3/97. The working day will change to 10, 11, 12, 13, 18,19, 20/3/97,... respectively. Repeat this step until exceeding the project completion date for a while in order to spare for project delay.

3.2) Click at navigator

4) Schedule daily production target

4.1) Open PS master program with the normal procedure

4.2) Key information about order size and batch size into green cells of ORDER SIZE [E7] and BATCH SIZE [E9] respectively.

4.3) Key production capacity per day of a production centre which is required for scheduling, in green cells of PRODUCTION RATE [E5]

4.4) Key number of beginning and finishing batch continuously into green cells of START BATCH [G14], and TO [G16] respectively

4.5) Click and drag to select range of daily production schedule which has been computed automatically in row of DAILY TARGET [26] from the first date to the last date.

4.6) Select *Copy* from *Edit* menu

4.7) Switch to Production Target(Table) worksheet in PMC program

4.8) According to Project Master Plan, place active cell at the intersection of starting date of the computed batch(es) and its production centre.

4.9) Select *Paste Special* from *Edit* menu, dialogue box Paste Special will appear

4.10) Select *Value* in section of Paste

4.11) Select *None* in section of Operation

4.12) Click OK., daily production target of that production centre will be set.

4.13) Switch to PS program

4.14) Repeat step 4.4 to 4.13 until completing every batch of that production centre

4.15) Repeat step 4.3 to 4.14 until completing every production centre

4.16) Click at navigator

4.17) Switch to Production Target(Table) worksheet in PMC program

4.18) Press Ctrl + Z to protect worksheet

5) Key project information

5.1) Select *Project Information* from *Over Views* menu, *Project Information* worksheet will appear

5.2) Key project information into green cells as follows:

JOB No. [G5]

PRODUCTION NAME [G7]

ORDER SIZE [G9]

UPPER CONTROL LIMIT [G11]

LOWER CONTROL LIMIT [G13]

6) Identify project duration

6.1) Click at green cell of *BASELINE DURATION* [G15]

6.2) Key in “ = ” symbol

6.3) Select *Production Target(Table)* worksheet by clicking at its label

6.4) Click at cell which represents the ending date of project in row of *DATE*[6]

6.5) Key in “ - ” symbol

6.6) Select *Production Target(Table)* worksheet by clicking at its label

6.7) Click at cell which represents the starting date of project in row of *DATE* [6]

6.7) Press Enter, project duration will be shown

7) Key delivery date

7.1) Select *Delivery Contract* from *Over Views* menu

7.2) According to delivery contract, key the cumulative number of distribution transformers which must be delivered in green area of *Delivery Contract* [13]

8) Key items of Insulation production centre

8.1) Select *Insulation By Items* from *Centres* menu

8.2) Select *Daily Pieces*, Insulation Daily (Pieces) worksheet will appear

8.3) Press Ctrl + X to cancel protection

8.4) Key description of insulation and quantity which is required for one unit of distribution transformer in green area of column DESCRIPTION [B] and PIECES / UNIT [C] respectively until completing every item

8.5) Press Ctrl + Z to protection

8.6) Click at navigator

9) Key items of Core cutting production centre

9.1) Select *Core Cutting By Items* from *Centres* menu

9.2) Select *Daily Pieces*, Core Cutting Daily(Pieces) worksheet will appear

9.3) Key size of silicon steel slit and quantity which is required for one unit of distribution transformer in green area of column WIDTH (m.m.) [A] and PIECES / UNITS [C] respectively until completing every item

9.4) Click at navigator

10) Select *Save* from *File* menu to save database

11) Select *Daily Update* from *Facilities* menu to start program before keying actual production result

12) Select *Save* from *File* menu to save database

Update daily production result

1) Open file, which is required to update, with normal procedure

2) Key daily actual production result of Insulation production centre

2.1) Select *Insulation By Items* from *Centres* menu

2.2) Select *Daily Pieces*, Insulation Daily(Pieces) worksheet will appear

2.3) Key daily actual production result of Insulation production centre item by item in green area until every item is completed

2.4) Click at navigator

3) Key daily actual production result of Core cutting production centre

3.1) Select *Core Cutting By Items* from *Centres* menu

3.2) Select *Daily Pieces*, Core Cutting Daily(Pieces) worksheet will appear

3.3) Key daily actual production result of Core cutting production centre item by item in green area until every item is completed

3.4) Click at navigator

4) Key daily actual production result of other production centres

4.1) Select *Actual Production* from *Over Views* menu

4.2) Select *Input Table*, Actual Production(Table) worksheet will appear

4.3) Key daily actual production result of each production centre into green area except Insulation production and Core cutting

4.4) Click at navigator

5) Select *Save* from *File* menu to save database

6) Update database

6.1) Check every worksheet to ensure that navigator in each worksheet has been clicked already

6.2) Select *Daily Update* from *Facilities* menu

7) Identify delay or progress plan

7.1) Select *Completion Day Forecast* from *Over Views* menu

7.2) Select *Table*

7.3) Click at green cell in the row of Acc. Current Delay [9]

7.4) Key in “ = ” symbol

7.5) Click at the label of %Completion & Performance Ratio worksheet, Percentage Completion Performance Ratio table will appear

7.6) At the row of ACC. ACTUAL % COMPLETION [7], verify that how much percentage the project actually completes at current date

7.7) Focus at the row of ACC. TARGET % COMPLETION [8] to compare that when actual percentage completion from 7.6 should be completed. Then click at cell in the row of DATE [6] which represents that date

7.8) Key in “ - ” symbol

7.9) Click at the label of %Completion & Performance Ratio worksheet, Percentage Completion Performance Ratio table will appear

7.9) Click at cell in the row of DATE [6] which represents the current date

7.10) Press Enter

8) Select *Save* from *File* menu to save database

Remarks :

In case where there is at least one worksheet in which its navigator is not clicked, when using *Daily Update* command, program will show error and show warning dialogue box. Worksheet which appears at that time is the worksheet that causes error. Because its navigator is not clicked. Hence, click *End* at dialogue box and correct the error by using these following procedures.

Close File without keeping database

- 1) Select *Close* from *File* menu, dialogue box *Close* will appear
- 2) Click *No*, because database which is not completely updated is not needed to be kept
- 3) Open file with normal procedure again
- 4) Check every worksheet, there must be at least one worksheet which its navigator is not clicked (worksheet which appears during error). Once found, correct it by clicking at navigator.
- 5) Repeat step 6 to 8 of the procedure of Update daily production result

This method is quick and less complex. Thus, it should be adopted as the first corrective action. But if file is saved while closing it in step 2, error can be corrected by reopening file again and using the Move navigator backward procedure as follows:

Move navigator backward

- 1) Check each worksheet to seek worksheets which have been updated already
- 2) When worksheets which have been updated already are found, follow the procedure of Move navigator backward
- 3) For worksheets which have not been updated, click at navigator and pass through other worksheets
- 4) Repeat step 6 to 8 of procedure of Update daily production result



APPENDIX B
DAILY PRODUCTION REPORTS

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Table B.2 Daily production report for Low voltage coil winding

Daily Production Report

Division 105 Product Distribution Transformer kVA kV Phase
 Production Centre Low Voltage Winding TF JOB NO. LOT NO.
 Operator Date

Part 1	Description of Raw Materials / Intermediate Products	Amount	Working Period	
			Normal	O.T.
	1. Paper Cover Round Copper Wire dia. m.m. (Kg.)			
	2. LV. Thermopox (rolls)			
	3. LV. Channel (pieces)			

Part 2	ช่วงเวลาทำงาน	Production Result	
		Good	Defect
	Normal		
	O.T.		

Production Result

Reporter Date

Table B.4 Daily production report for Core cutting

Daily Production Report

Division <u>105</u>	Product <u>Distribution Transformer</u>	kVA	kV	Phase
Production Centre <u>Core Cutting TF</u>	JOB NO. _____	LOT NO. _____		
Operator _____	Date _____			

Part 1

Description of Silicon Steel Slit			Amount	Working Period	
				Normal	O.T.
1. Silicon Steel Plate	Width	m.m.			
2. Silicon Steel Plate	Width	m.m.			
3. Silicon Steel Plate	Width	m.m.			
4. Silicon Steel Plate	Width	m.m.			
5. Silicon Steel Plate	Width	m.m.			
6. Silicon Steel Plate	Width	m.m.			

Part 2

Description of Silicon Steel Plates			Production Result		Working Period	
			Good	Defect	Normal	O.T.
1. Silicon Steel Plate	Width	m.m.				
2. Silicon Steel Plate	Width	m.m.				
3. Silicon Steel Plate	Width	m.m.				
4. Silicon Steel Plate	Width	m.m.				
5. Silicon Steel Plate	Width	m.m.				
6. Silicon Steel Plate	Width	m.m.				

Production Result _____

Reporter _____

Date _____

Table B.5 Daily production report for Punching**Daily Production Report**

Division 106 Product Distribution Transformer kVA kV Phase
 Production Centre Punching TF JOB NO. LOT NO.
 Operator Date

Description of Silicon Steel Plate			Amount (pieces)		Working Period	
			Good	Defect	Normal	O.T.
1. Silicon Steel Plate	Width	m.m.				
2. Silicon Steel Plate	Width	m.m.				
3. Silicon Steel Plate	Width	m.m.				
4. Silicon Steel Plate	Width	m.m.				
5. Silicon Steel Plate	Width	m.m.				
6. Silicon Steel Plate	Width	m.m.				

Production Result Reporter Date

Table B.6 Daily production report for Core stacking

Daily Production Report

Division <u>105</u>	Product <u>Distribution Transformer</u>	kVA	kV	Phase
Production Centre <u>Core Stacking TF</u>	JOB NO. _____	LOT NO. _____		
Operator _____	Date _____			

Part 1	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th rowspan="2" style="width: 60%;">Description of Raw Materials / Intermediate Product</th> <th rowspan="2" style="width: 10%;">Amount</th> <th colspan="2" style="width: 30%;">Working Period</th> </tr> <tr> <th style="width: 10%;">Normal</th> <th style="width: 10%;">O.T.</th> </tr> </thead> <tbody> <tr><td>1. Silicon Steel Plate Width m.m.</td><td></td><td></td><td></td></tr> <tr><td>2. Silicon Steel Plate Width m.m.</td><td></td><td></td><td></td></tr> <tr><td>3. Silicon Steel Plate Width m.m.</td><td></td><td></td><td></td></tr> <tr><td>4. Silicon Steel Plate Width m.m.</td><td></td><td></td><td></td></tr> <tr><td>5. Silicon Steel Plate Width m.m.</td><td></td><td></td><td></td></tr> <tr><td>6. Silicon Steel Plate Width m.m.</td><td></td><td></td><td></td></tr> <tr><td>7. Polyester Rod dia. m.m. (rods)</td><td></td><td></td><td></td></tr> <tr><td>8. Core Clamp</td><td></td><td></td><td></td></tr> <tr><td>9. Yoke Bolt dia. m.m.</td><td></td><td></td><td></td></tr> <tr><td>10. Winding Bolt dia. m.m.</td><td></td><td></td><td></td></tr> <tr><td> </td><td></td><td></td><td></td></tr> <tr><td> </td><td></td><td></td><td></td></tr> <tr><td> </td><td></td><td></td><td></td></tr> </tbody> </table>	Description of Raw Materials / Intermediate Product	Amount	Working Period		Normal	O.T.	1. Silicon Steel Plate Width m.m.				2. Silicon Steel Plate Width m.m.				3. Silicon Steel Plate Width m.m.				4. Silicon Steel Plate Width m.m.				5. Silicon Steel Plate Width m.m.				6. Silicon Steel Plate Width m.m.				7. Polyester Rod dia. m.m. (rods)				8. Core Clamp				9. Yoke Bolt dia. m.m.				10. Winding Bolt dia. m.m.															
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Part 2	<table border="1" style="width: 80%; border-collapse: collapse;"> <thead> <tr> <th rowspan="2" style="width: 30%;">Working Period</th> <th colspan="2" style="width: 70%;">Production Result</th> </tr> <tr> <th style="width: 35%;">Good</th> <th style="width: 35%;">Defect</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">Normal</td> <td></td> <td></td> </tr> <tr> <td style="text-align: center;">O.T.</td> <td></td> <td></td> </tr> </tbody> </table>	Working Period	Production Result		Good	Defect	Normal			O.T.																																																	
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Table B.7 Daily production report for Core and coil assembly

Daily Production Report					
Division	106	Product	Distribution Transformer	kVA	kV Phase
Production Centre	Core and Coil Assembly	JOB NO.		LOT NO.	
Operator				Date	

Part 1	Description of Raw Materials / Intermediate Products	Amount	Working Period	
			Normal	O.T.
	1. Core			
	2. Coil			
	3. Insulation Strip, Big			
	4. Insulation Strip, Small			
	5. Yoke Insulation			
	6. Wooden Rod dia. m.m.			
	7. W/I Spacer Winding thick m.m.			
	8. W/I Spacer Clamping thick m.m.			
	9. Wood thick m.m.			
	10. Polyester Angle Spacer			
	11. Steel Plate m.m.			
	12. Steel Plate m.m.			
	13. Steel Plate m.m.			
	14. Steel Plate m.m.			

Part 2	Working Period	Production Result	
		Good	Defect
	Normal		
	O.T.		

Production Result	
Reporter	Date

Table B.8 Daily production report for Tanking and oil filling

Daily Production Report

Division	105	Product	Distribution Transformer	kVA	kV	Phase
Production Centre	Tanking and Oil Filling	JOB NO.		LOT NO.		
Operator				Date		

Part I	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th rowspan="2" style="width: 60%;">Description of Raw Materials / Intermediate Products</th> <th rowspan="2" style="width: 10%;">Amount</th> <th colspan="2" style="width: 30%;">Working Period</th> </tr> <tr> <th style="width: 10%;">Normal</th> <th style="width: 10%;">O.T.</th> </tr> </thead> <tbody> <tr><td>1. Heated Intermediate Distribution Transformer</td><td></td><td></td><td></td></tr> <tr><td>2. Transformer Tank</td><td></td><td></td><td></td></tr> <tr><td>3. LV. Bushing</td><td></td><td></td><td></td></tr> <tr><td>4. LV. connecting bolt</td><td></td><td></td><td></td></tr> <tr><td>5. HV. Bushing</td><td></td><td></td><td></td></tr> <tr><td>6. HV. connecting bolt</td><td></td><td></td><td></td></tr> <tr><td>7. Drain Valve</td><td></td><td></td><td></td></tr> <tr><td>8. Oil (litre)</td><td></td><td></td><td></td></tr> <tr><td>9. Oil Level Gauge</td><td></td><td></td><td></td></tr> <tr><td>10. Accessory, Nut (set)</td><td></td><td></td><td></td></tr> <tr><td> </td><td></td><td></td><td></td></tr> <tr><td> </td><td></td><td></td><td></td></tr> </tbody> </table>	Description of Raw Materials / Intermediate Products	Amount	Working Period		Normal	O.T.	1. Heated Intermediate Distribution Transformer				2. Transformer Tank				3. LV. Bushing				4. LV. connecting bolt				5. HV. Bushing				6. HV. connecting bolt				7. Drain Valve				8. Oil (litre)				9. Oil Level Gauge				10. Accessory, Nut (set)											
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Part 2	<table border="1" style="width: 60%; border-collapse: collapse;"> <thead> <tr> <th rowspan="2" style="width: 30%;">Working Period</th> <th colspan="2" style="width: 70%;">Production Result</th> </tr> <tr> <th style="width: 35%;">Good</th> <th style="width: 35%;">Defect</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">Normal</td> <td></td> <td></td> </tr> <tr> <td style="text-align: center;">O.T.</td> <td></td> <td></td> </tr> </tbody> </table>	Working Period	Production Result		Good	Defect	Normal			O.T.																																													
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Reporter _____	Date _____																																																						

Table B.10 Weekly production report

Weekly Production Report

Division 105 Product Distribution Transformer kVA _____ kV _____
 JOB NO. _____ Lot NO. _____ Date _____

Operations				
1. Core Production	Core Cutting			
	Core Stacking			
2. Insulation Production				
3. Coil Production	Low Voltage			
	High Voltage			
4. Assembly	Core & Coil Assembly			
	Tanking & Oil Filling			
	Final Assembly			

Reporter _____

Date _____

VITA

Assadej Vanichchinchai was born on January 13, 1973 in Bangkok, Thailand. He obtained his Bachelor's Degree in Industrial Engineering from Chulalongkorn University in 1994 academic year and continued to pursue his graduate study in Engineering Management at The Regional Centre for Manufacturing Systems Engineering at the same university in 1996.



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