

AMENDMENT

No. : 02
Date : January 9th . 2018
Ref. DCR No. : 00306/DM9000/17

Document No.
10-DP-W602.02
Rev./Date : 2 / Sep. 29th, 2016
Page : 1 of 1

DOCUMENT TITLE: "Preventive Maintenance"


This amendment forms a part of and shall be attached to the amended document

Item No.	Paragraph	Change Description
01	-	Revise Form F-DP602.02-01 "Preventive Maintenance Instruction" to be as attached (see attachment 1)
02	-	Revise Form F-DP602.02-05 "Maintenance Schedule and Check Sheet PM Data" to be as attached (see attachment 2)
03	-	Add new Form F-DP602.02-10 "Preventive Maintenance Checklist" as attached (see attachment 3)
04	-	Add new Form F-DP602.02-11 "Preventive Maintenance Instruction" for operator as attached (see attachment 4)

	Author	Originator	Checked by	Approved by
Organization	Q. System Doc. & Control	Prod. Facilities Maintenance	Prod. Facilities Maintenance	Detail Part Manufacturing
Name	M. Achitya	Dadang	Ale Misbah	Nefota FL
Signature				
Date	Jan . 5 . 2018	Jan . 8 . 2018	Jan . 8 . 2018	Jan 9 . 2018

F-DP401.01-01

Attachment 1 of Amend 2_10-DP-W602.02

 FM- DP	Preventive Maintenance Instruction										Rev. 2								
	PMI Nr. :										Job Code : 9100								
	Plant Description :										Machine Status			Shift					
	Codification :										"on"	"off"	1	2	3				
Plant Location :																			
Level	Instruction	Sub System									Material & Tool required								
		Electrical & control	Axis	Spindle	APC	ATC	Hydroulik Unit	Lube & Coolant	Cooling System	Pneumatic Unit	Material								
											No	Name of Material	level	Qty	Name of Material	level	Qty		
											1								
											2								
											3								
											4								
											5								
											6								
											7								
											No	Tool		level	q-ty		Tool	level	q-ty
											1								
											2								
											3								
											4								
											5								
											6								
											Man hours required								
											No	Level		16 hours			men	mh	
										1									
										2									
Description :																			
Prepared by										Checked by									
Date :										Date :									
										Approved by									
										Date :									
										Remarks:									



F-DP602.02-01


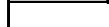
Description of Entries: 1. Self Explanatory

Attachment 2 of Amend 2_10-DP-W602.02

Preventive Maintenance Schedule and Realization, Year 20....

Codification	Facilities	Plan	January				February				March				April				May				June				July				August				September				October				November				December				Jan-18							
		Real	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	1	2	3	4
		Plan																																																								
		Real																																																								

 : Planned of Preventive Maintenance
 : Realization of Preventive Maintenance

 : PM 2000 Hours (6 Months)
 : PM 4000 Hours (12 Months)

Accuracy Test

Squareness (mm)	Value (mm)		
	X - Y	X - Z	Y - Z
Measured Value			
Allowance			

Parallelism between the center line of the spindle and the Z-axial	Value (mm)	
	X - Z	Y - Z
Measured Value		
Allowance		


Spindle Run Out (mm)	Value (mm)	
	A	B
Measured Value		
Allowance		

Approved by Spv. Maintenance	Approved by Spv. Operator
Date :	Date :
NIK :	NIK :

F-DP602.02-05

Description of Entries: 1. Self Explanatory

Attachment 3 of Amend 2_10-DP-W602.02


		PREVENTIVE MAINTENANCE CHECK LIST PMI Nr. : Plant Description :			
FM- DP					
No	SUB - SYSTEM	DEVICES		Level (hours)	
1		1			
		2			
		3			
		4			
		5			
2		1			
		2			
		3			
		4			
		5			
3		1			
		2			
		3			
		4			
		5			
4		1			
		2			
		3			
		4			
		5			
5		1			
		2			
		3			
		4			
		5			
6		1			
		2			
		3			
		4			
		5			
7		1			
		2			
		3			
		4			
		5			
8		1			
		2			
		3			
		4			
		5			
9		1			
		2			
		3			
		4			
		5			
Operator / Leader		Date	Maintenance Technician		Date

F-DP602.02-10

Description of Entries: 1. Self Explanatory

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Attachment 4 of Amend 2_10-DP-W602.02

 FM - DP		Preventive Maintenance Instruction PMI Nr. : Plant Description : Codification : Plant Location :																									Rev. 0						
																											Job Code : 9100						
																											Machine Status						
																											"on"	"off"					
Shift		1		2	3																												


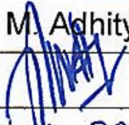

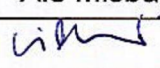
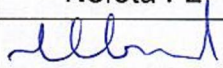
level	No.	Instruction	Month (.....) /Year (.....)																														
daily	1		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
	2																																
	3																																
	4																																
	5																																
	6																																
	7																																
	8																																
	9																																
			Paraf (inisial nama operator)																														
		Paraf (inisial nama mainetence SR)																															

level	No.	Instruction	Month (.....) /Year (.....)					
weekly	1		week 1	week 2	week 3	week 4	week 5	
	2							
	3							
	4							
	5							
	6							
			Paraf (inisial nama operator)					
			Paraf (inisial nama mainetence SR)					

Keterangan :			
	Dikerjakan Oleh	Diperiksa	Disetujui
	operator	shop leader	maintenance supervisor

F-DP602.02-11

Description of Entries: 1. Self Explanatory

	AMENDMENT		Document No.	
	No. : 01 Date : <i>October 24th, 2017</i> Ref. DCR No. : 0180/DM9000/17	10-DP-W602.02 Rev./Date : 2 / Sep. 29 th , 2016 Page : 1 of 1		
DOCUMENT TITLE: "Preventive Maintenance"				
This amendment forms a part of and shall be attached to the amended document				
Item No.	Paragraph	Change Description		
01	3.1.8	Add new Para 3.1.8: 3.1.8 Perform a daily and weekly maintenance to each machine and send the jobs done back to maintenance department.		
02	3.3.1.2	Revise Para 3.3.1.2 to be as follow: 3.3.1.2 Refer to facility maintenance manual and facility historical records or MTBF/DT create, revise and develop PMI (Preventive Maintenance Instruction, form F-DP602.02-01, see Attachment-2) for each key production facility, such as: <ul style="list-style-type: none"> • Determination of time required for executing the maintenance job in accordance with the required PMI for each production facility. • <i>establishment of 2000 hrs and 4000 hrs of preventive maintenance interval</i> • Determination of tools, spare parts, consumable material and man hour required for preventive maintenance for each production facility. • Determination of system, sub-system, components and devices to be checked or tested periodically • <i>Create daily and weekly maintenance procedure and issue to the machine operators</i> • <i>Perform practice to the operators to familiarize the jobs to be done</i> 		
	Author	Originator	Checked by	Approved by
Organization	Q. System Doc. & Control	Prod. Facilities Maintenance	Prod. Facilities Maintenance	Detail Part Manufacturing
Name	M. Adhitya	Dadang	Ale Misbah	Nefota FL
Signature				
Date	23. 10. 2017	24. 10. 2017	24. 10. 2017	24. 10. 2017

F-DP401.01-01

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DIRGANTARA INDONESIA
INDONESIAN AEROSPACE (IAe)

MANUAL PART 10

**PREVENTIVE
MAINTENANCE**

Document No.

10-DP-W602.02

Revision : 2

Page : 1 of 17

VERIFY THAT THIS IS THE CORRECT REVISION BEFORE USE

REVISION HISTORY

<u>Rev.</u>	<u>Description of Change</u>	<u>Approved by</u>	<u>Effective Date</u>
0	Initial release	Abdul Razak	01/09/2009
1	Rewrite 10-AE-W602.02 & 10-AI-W602.01, Refer to #DCR 0117/DM9000/13	Yustiono DA	Dec. 09, 2013
2	Refer to DCR No. 0170/DM9000/16, Amend 1 & 2	Yustiono DA	Sep. 29, 2016

REFERENCE DOCUMENTS

Document Number

10-DP-P602

Document Title

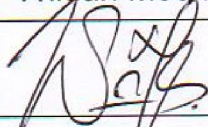
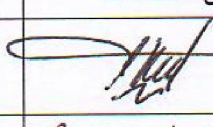
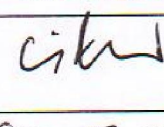
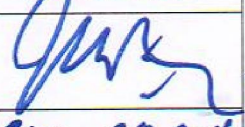
Production Facility Maintenance

Documents referenced in this procedure are applicable at extent specified herein.

Affected Function : Facility Maintenance (FM)
Quality Assurance (QA)
Production Shop
Production Planning & Control (PPC)
Logistic

1. Purpose

To describe the responsibility of Facility Maintenance (FM) personnel to execute preventive maintenance to production facilities.

	Author	Originator	Checked	Approved
Organization	Q. System Doc. & Control	Prod. Facilities Maintenance	Prod. Facilities Maintenance	Detail Part Manufacturing
Name	Wildan Moch S	Dadang	Ale Misbah	Yustiono DA
Signature				
Date	Sep. 26, 2016	Sep. 26, 2016	Sep. 28, 2016	Sep. 29, 2016

2. Scope

This Instruction applies to all key production facilities and the designated maintenance personnel who perform preventive maintenance to production facilities that affect the quality of product produced at DP (The chart of Preventive Maintenance process see Attachment -1)

3. Instruction

3.1 QA, Production Shop and Logistic shall

3.1.1 Receive approved PMS (Preventive Maintenance Schedule, form *F-DP602.02-02*, see Attachment-3) from FM (Facility Maintenance).

3.1.2 Give support and monitor to maintenance technician during performing PM (Preventive Maintenance).

3.1.3 Give required information to maintenance services function about condition of the facility since the latest PM.

3.1.4 Perform running test to assure that the facility is running well.

Note 1: Together with affected function, prepare and set up the tools required for performing the all necessary tests, such as: fixture, work piece, NC program, NCOD.

3.1.5 Accept and approve the PM Job by signing MWO (Maintenance Work Order, form *F-DP602.02-03*, see attachment-4).

3.1.6 *Maintenance planning shall install hardcopy form F-DP602.02-02 Preventive Maintenance Schedule (yearly)*

3.1.7 *Maintenance services shall update form F-DP602.02-02 Preventive Maintenance Schedule by filling the Real column after Preventive Maintenance has been done.*

3.2 Production Planning & Control (PC) shall

3.2.1 Receive approved PMS from FM

3.2.2 Inform to Maintenance Planning and Control (MPC) function in case the facility is not available to be interrupted for PM because of rush order/facility occupation.

3.2.3 Receive the PMS changes from MPC function when unscheduled maintenance occurred (i.e. Predictive Maintenance).

3.2.4 Review the PMS and compare with production schedule every next coming two months and inform to FM.

3.3 Facility Maintenance (FM)

3.3.1 Maintenance Engineering (ME)

3.3.1.1 Identify key production facilities to be maintained

and resources required for accomplishing the preventive maintenance policy.

Key facilities definition:

Machines or equipment which:

- *have complicated design and advanced control system (CNC, PLC)*
- *are simple machines (without complicated control system) but have no any back-up machine (single facility)*

3.3.1.2 Refer to facility maintenance manual and facility historical records or MTBF/DT create, revise and develop PMI (Preventive Maintenance Instruction, form *F-DP602.02-01*, see Attachment-2) for each key production facility, such as:

- Determination of time required for executing the maintenance job in accordance with the required PMI for each production facility.
- Determination of interval of preventive maintenance (monthly, quarterly or yearly)
- Determination of tools, spare parts, consumable material and man hour required for preventive maintenance for each production facility.
- Determination of system, sub-system, components and devices to be checked or tested periodically.

3.3.1.3 Send a copy of approved PMI to MPC function.

3.3.1.4 Create and Issue HE (Hasil Evaluasi, form *F-DP602.02-04*, see attachment-5) on CMMS, if resource requirement not included within PMI or PMI is not up-to-date.

3.3.1.5 Coordinate with Maintenance Services (MS) make an analysis or justification to the facilities in case the maintenance job is not available to be done because of production load (rush order).

Note 2: Perform on-line checking (indirect PM) with MS function, give a written guaranty and define new due date on MWO.

3.3.1.6 Make an analysis and technical report about facility performance (DT/MTBF), failure analysis, replacement analysis etc, for the purpose of revision and/or development of PMI.

3.3.1.7 Analyze the historical record of PM for the purpose of improvement production facility.

3.3.1.8 Issue HE if the improvement production facility will

be done the next need spare parts, and send to Material Planner (MP) for order execution.

- 3.3.1.9 Issue plan of improvement / re-condition and predictive maintenance schedule including required resources and send to MPC function.

3.3.2 Maintenance Planning and Control (MPC)

- 3.3.2.1 Make a draft annually plan of maintenance (PMS) for all key production facilities based on the time and interval required as specified in PMI.
- 3.3.2.2 Propose the draft of PMS's to Production Planning (PP) for review and approval.
- 3.3.2.3 Receive the correction from PP in case the proposed drafts of PMS's are not synchronous to the Production schedule.
- 3.3.2.4 Revise the draft of PMS's and re-send to PP for approval.
- 3.3.2.5 Distribute the approved PMS's to user (area managers), Production Control (PC) and Maintenance Services (MS) function.
- 3.3.2.6 Review PMS for next coming two months PM execution with Shop loader (PC function) to fix the next coming production and maintenance schedule.
- 3.3.2.7 Issue the MWO using CMMS application attached with PMI to MS function on first week of the month (Refer to PMS).
- 3.3.2.8 Control the realization and progress of MWO and give support to MS function in term of coordination with related function

Notes 3: For delayed MWO, collect and re-issue to MS when the facility have been available for PM (See Para 3.3.1.5).

- 3.3.2.9 Record/entry closed MWO into the CMMS.
- 3.3.2.10 Make MR (Maintenance Report, form *F-DP602.02-07*, see Attachment-8) containing the result of maintenance such as facility down time, calibration, geometrical test, ball bar test and send to users.
- 3.3.2.11 Archive all executed PM documents per group of production facilities.

3.3.3 Material Planning (MP) function

- 3.3.3.1 Refer to PMI, control and keep in stock the tools, spare parts and consumable material required for PM realization.

- 3.3.3.2 Identify required materials include consumable material and compare to material historical data.
- 3.3.3.3 Make a list of required consumable materials, tools and spare parts as plan and budget estimation for a year and send to Logistic.
- 3.3.3.4 In case the tools, spare parts and consumable material are not available or minimum stock level in the maintenance store, issue material request to Logistic for order, which describes:
 - Specification of the required spare parts or consumable material
 - Quantity of the required spare parts or consumable material
 - Recommended vendor/agency
 - Estimated unit price
 - When the required spare parts shall be available
- 3.3.3.5 Follow up the material request progress to Logistic until material is received.
- 3.3.3.6 Issue SPB (Surat Pengantar Barang, form *F-DP602.02-06*, see Attachment-7), send to Maintenance Store (MSt) and MS when ordered spare parts and or consumable material have been received.

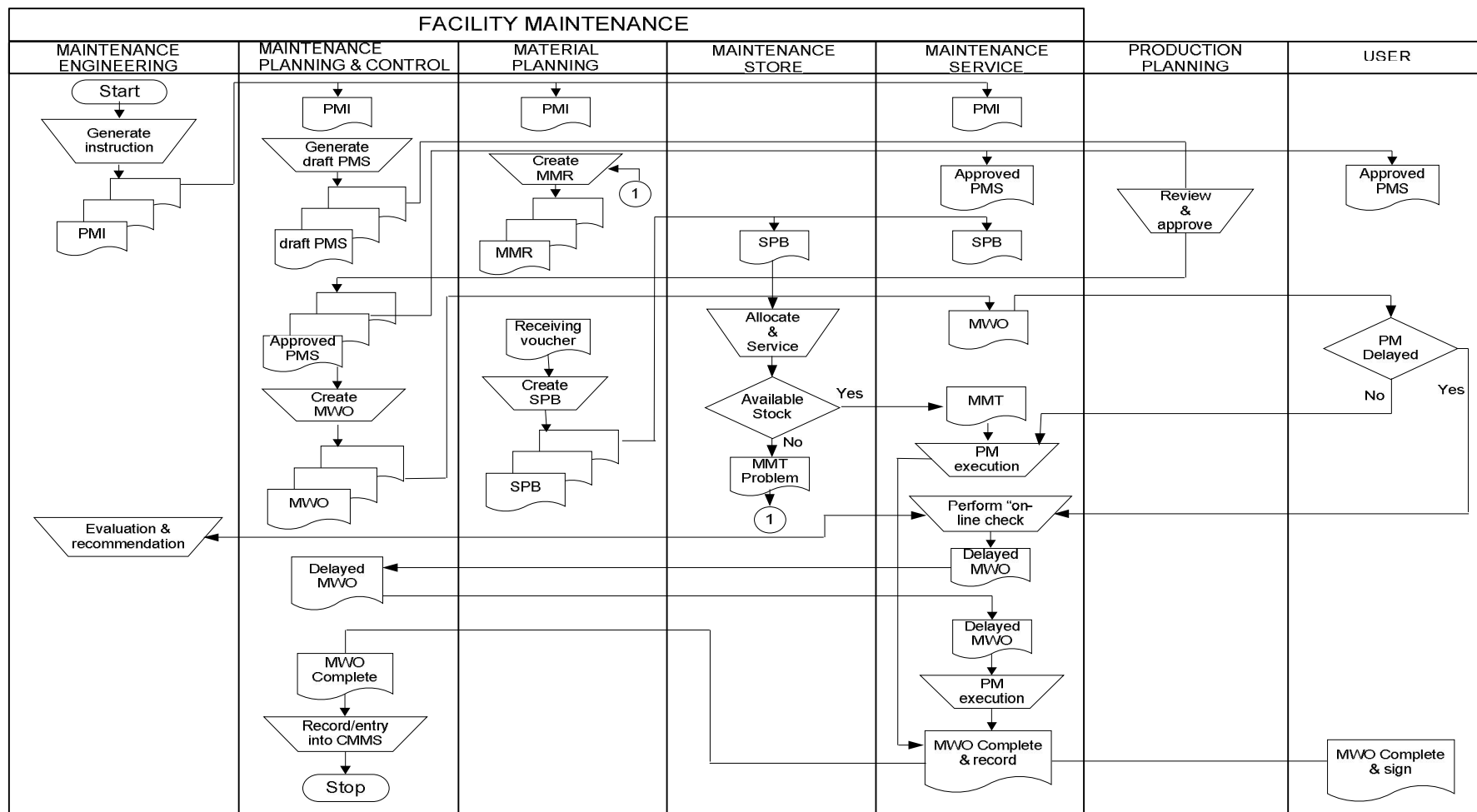
3.3.4 Maintenance Store (MSt) function

- 3.3.4.1 Receive material as the SPB, labeled and put in store, write the received material on control card (Control Material, form *F-DP602.02-09*, see Attachment-10) and entry or update store/location into the CMMS as incoming transactions of inventory system.
- 3.3.4.2 Support MS function in case of taking the spare parts and consumable material by using MT (Material Ticket, form *F-DP602.02-08*, see Attachment-9) and entry into CMMS as outgoing transactions of inventory system.
- 3.3.4.3 Record the MT and forward to MPC function for issuing form Control Material, form *F-DP602.02-09* (See Attachment-10)
- 3.3.4.4 Issue MT (MT problem, see Attachment-9) by use of CMMS in case spare parts or material for PM are not available in stock (Refer to Para 3.3.3.3).
- 3.3.4.5 Hand over general tool to MS as personnel tool inventory.

3.3.5 Maintenance Services (MS) function


- 3.3.5.1 Receive general tool as personal inventory from maintenance store.
- 3.3.5.2 Confirm to user to execute PM and lock out or post SERVICE sign to the facility to assure that the machine is not used during maintenance activities.
- 3.3.5.3 In case the Corrective Maintenance (CM) arise (Refer to 10-DP-W602.01) close by (prior to) the due-date of PM, perform both CM and PM on the addressed production facility (the term of ahead PM schedule).
- 3.3.5.4 In case of rush order at the due-date of PM, the PM realization may be delayed for a certain days, perform the on-line check instead (the term of behind PM schedule) (Refer to Note 2).
- 3.3.5.5 Take the spare parts, consumable material or tools from maintenance store by using MT (See Para 3.3.4.2).
- 3.3.5.6 Execute the PM Job in accordance with requested MWO and PMI.
- Note 4: Perform machine calibration (if required), and record the result on MCR form F-DP602.02-05 (see Attachment-6).
- 3.3.5.7 Create HE using CMMS to propose recommendation to ME function in term of revision and/or development of PMI.
- 3.3.5.8 Propose for predictive maintenance to ME if any symptoms of trouble found during performing PM.
- 3.3.5.9 Hand over the facility to user when the related facility is ready to use for production.
- 3.3.5.10 Record the all PM activities on the MWO, (tag/cross on PMI), MCR (if any) and entry into CMMS.

Attachment -1



VERIFY THAT THIS IS THE CORRECT REVISION BEFORE USE

Attachment -2

 FM - AE		Preventive Maintenance Instruction										Rev. 1									
		PMI Nr. :										Job Code : 9100									
		Plant Description :										Machine Status									
		Codification :										Shift									
		Plant Location :										"on"		"off"		1		2		3	

Level	Instruction	Sub System										consumable mat'l & tool required									
		NC Control	Axis	Spindle	Axis Servo	Inverter Unit	Hydraulic Unit	Lube & Coolant	Cooling System	Filter & Fan	Material										
												No	Name of Material		level	Qty	Name of Material		level	Qty	
												1									
												2									
												3									
												4									
												5									
												6									
												7									
												No	Tool		level	q-ty	No	Tool		level	q-ty
												1									
												2									
												3									
												4									
												Man hours required									
												No	Level		hours/days		men		mh		
												1									
												2									

Description :			

Prepared by		Checked by		Approved by		Remarks:
Date :		Date :		Date :		

F-DP602.02-01

Description of Entries : 1. Self Explanatory


VERIFY THAT THIS IS THE CORRECT REVISION BEFORE USE

PLANNED MAINTENANCE SCHEDULE MACHINERY YEARS 20....

F-DP602.02-02

Description of Entries : 1. Self Explanatory

Attachment -4

 PT GARUDA INDONESIA INDONESIAN AIRSPACE (IAG) FACILITY MAINTENANCE	MAINTENANCE WORK ORDER															
	Job Type : _____				WO.Number : _____				Date : _____							
Completed by MPC	Machine Description : _____								Machine Condition							
	Codification : _____															
	Plant Location : _____															
	Requested By : _____								ON / OFF							
	Reference : _____															
	Description of Job															
Completed by Services	Action taken															
	No	Date	Nik	Start	Finish	Start	Finish	Date	Nik	Start	Finish	Start	Finish			
Prepared By			Approv. By Spv.Maintenance Sign			Date		NIK		Approv. By Spv.Operator Sign			Date		NIK	

F-DP602.02-03

Description of Entries : 1. Self Explanatory

Attachment -5

HASIL EVALUASI

No. : (2)
 Referensi : (3)
 Kodifikasi : (4)
 Nama Fasilitas : (5)

Kepada
 Yth : (1)
 di


Uraian Masalah : <div style="text-align: right;">(6)</div>						
Hasil Evaluasi : <div style="text-align: right;">(7)</div>						
Rekomendasi : <div style="text-align: right;">(8)</div>						
Tgl. Pelaksanaan : (9) Type Pekerjaan : (10)		Executor : (11)		Dokumen : (12)		
No. (13)	Stock No. (14)	Diskripsi Kebutuhan Material (15)	Jml (16)	SoH (17)	Sat (18)	Keterangan (19)
DIEVALUASI		DIPERIKSA			DISETUJUI	
Nama (20) (21)		 (22)	
Nik (23) (24)		 (25)	
Tgl (26) (27)		 (28)	
Ttd (29) (30)		 (31)	

F-DP602.02-04

Description of Entries :

- 1 Kepada Spv. Maintenance Planning & Control
- 2 Nomor Hasil Evaluasi (di create oleh system CMMS)
- 3 Nomor RFM/WO yang dipakai sebagai referensi pengajuan evaluasi.
- 4 Kodifikasi (ditampilkan oleh system CMMS setelah mengisi referensi).
- 5 Nama fasilitas (ditampilkan oleh system CMMS setelah mengisi referensi).
- 6 Uraian permasalahan yang akan dijadikan acuan untuk evaluasi.
- 7 Uraian hasil evaluasi setelah mempelajari akar permasalahan dan solusinya.
- 8 Hal hal yang harus dilakukan oleh Maintenance Planning maupun Services.
- 9 Tanggal rencana pelaksanaan pekerjaan hasil evaluasi.
- 10 Disi type pekerjaan (modifikasi, penggantian, pembuatan, perbaikan dll).
- 11 Dikerjakan sendiri oleh maintenance atau outsourcing.
- 12 No Dokumen (jika dioutsourcing keluar).
- 13 No.urut material yang diperlukan.
- 14 Nomor Stok yang dperlukan untuk pekerjaan hasil evaluasi.
- 15 Nama material (ditampilkan oleh system CMMS setelah mengisi nomor stock).
- 16 Jumlah material yang dibutuhkan
- 17 jumlah material yang tersedia digudang (ditampilkan oleh system CMMS setelah mengisi nomor stock).
- 18 Jenis satuan material (ditampilkan oleh system CMMS setelah mengisi nomor stock).
- 19 Keterangan status progress jika material diajukan ke bagian Pengadaan Logistik.
- 20 Nama personil yang melakukan evaluasi (ditampilkan oleh system CMMS setelah mengisi nik).
- 21 Nama Leader yang melakukan evaluasi (ditampilkan oleh system CMMS setelah mengisi nik).
- 22 Nama Supervisor yang melakukan evaluasi (ditampilkan oleh system CMMS setelah mengisi nik).
- 23 Nik personil yang melakukan evaluasi.
- 24 Nik Leader yang melakukan evaluasi.
- 25 Nik Supervisor yang melakukan evaluasi.
- 26 Tanggal dikeluarkannya hasil evaluasi oleh evaluator.
- 27 Tanggal diperiksanya hasil evaluasi oleh leader.
- 28 Tanggal disetejuinya hasil evaluasi oleh supervisor.
- 29 tanda tangan evaluator.
- 30 tanda tangan pemeriksa hasil evaluasi.
- 31 tanda tangan penyetuju hasil evaluasi.

Attachment -8

	MAINTENANCE REPORT (years)
	(Description)
(Graph Area)	
(Tabel Data)	
Note:	

F-DP602.02-07

Description of Entries : 1. Self Explanatory

VERIFY THAT THIS IS THE CORRECT REVISION BEFORE USE

