

<b>JINDAL ALUMINIUM LIMITED ROLLING AND EXTRUSION DIVISION</b>			
<b>PROCEDURE FOR MAINTENANCE</b>			
<b>DOC. NO. JAL/R&amp;E/MAT/PR/14</b>		<b>TITLE PAGE</b>	
<b>Issue #</b>	<b>Issue Date</b>	<b>Revision No.</b>	<b>Revision Date</b>
<b>B</b>	<b>01.07.17</b>	<b>02</b>	<b>02.11.2018</b>

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**AMENDMENT RECORD**

AMENDMENT			DISCARD		INSERT	
SL. NO.	DATE	DESCRIPTION	PAGE NO	REV. NO.	PAGE NO.	REV. NO.
01	01.07.17	In view correction in all the pages, Issue-A has made to Issue-B	--	--	--	--
02	18.08.18	Amended of why why analysis – Breakdown report	--	00	--	01
03	02.11.18	Amended of preventive maintenance as mention below. a) Procedure clause 8.2 b) List of records (SI No 07) c) PM Check sheet ( JAL/R&E/MAT/F/07)	--	00	--	01

	POSITION	SIGNATURE	DATE
Prepared by	QMS COORDINATOR		
Verified by	MANAGER- MAINT		
Approved by	GM -MAINT		

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## 1.0 PURPOSE

The purpose of this document is to ensure that with proper preventive maintenance scheme, all the equipments and machines installed in Rolling and Extrusion division are to work with minimum breakdown, so that production is not hampered.

## 1.1 OBJECTIVES

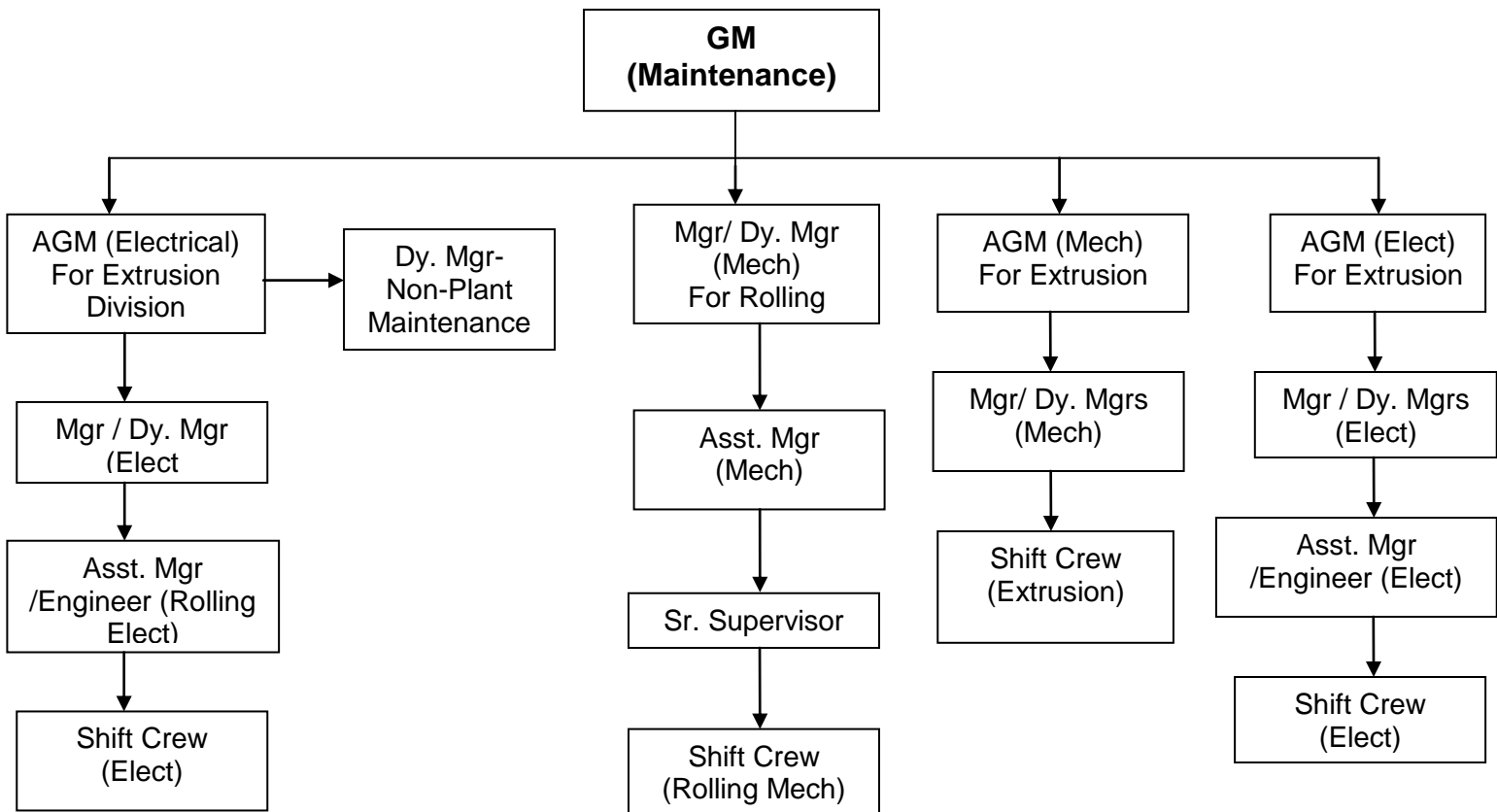
- To control the Break down hours.
- To control the power consumption.
- Reduction in hydraulic oil consumption.

## 2.0 SCOPE

- (Cl: 7.1.3 of IS/ISO-9001:2015 – Infrastructure  
7.1.4 Environment for the operation of processes  
7.1.5 Monitoring and measuring resources)

This covers maintenance of all equipment as per Annexure No.JAL/R&E/MAT/ANX/01 and calibration of Process Temperature Controllers & Indicators, Process Pressure Gauges.

## 3.0 DEPARTMENT FUNCTIONAL CHART (Cl: 5.3 of IS/ISO-9001:2015)



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### 3.1 **GM (MAINTENANCE)**

Reporting to OSD and be responsible for entire maintenance activities including breakdown/preventive maintenance and overhauling of plant (Electrical and Mechanical), as well as Non-Plant maintenance.

### 3.2 a) **DGM / AGM – MECHANICAL – ROLLING:**

Reporting to GM (Maintenance) and responsible for maintenance of cast house, rolling mill and all utilities assisted by Engineer (Mechanical).

### b) **DGM / AGM – MECHANICAL – EXTRUSION:**

Reporting to GM (Maintenance) and responsible for maintenance of Extrusion Foundry, Extrusion Production, Tool Shop and all utilities assisted by Engineer (Mechanical).

### 3.3 **AGM / DGM (ELECTRICAL)**

Reporting to GM (Maintenance) and responsible for all electrical maintenance, repairs, overhauling such as HT line, DG set, utilities, Foil Mills, Foil Annealing F/C's and separators. Also responsible for arranging consumables and electrical and electronic spares and new projects' electrical works.

### 3.4 **DY. MANAGER (ELECTRICAL)**

Reporting to GM (Maintenance) and responsible for all electrical maintenance, repairs, overhauling of Extrusion division equipments.

### 3.5 **ENGINEERS / SUPERVISORS (Non-Plant Maintenance)**

Reporting to GM (Maintenance) and be responsible for all non-plant maintenance activities which will be assigned by GM (Maintenance)

### 4.0 **INTERFACE**

- a) Cast House
- b) Rolling
- c) Foundry
- d) Production (E)
- e) Tool Shop
- f) QA (R&E)
- g) Purchase
- h) Stores
- i) Shipping

### 5.0 **REFERENCES - OEM's Operating and Maintenance Manuals.**

### 6.0 **INPUTS**

- The requisition from the departments for corrective action for the break down.
- The Operating Manuals of the machines.
- Necessary Tools & instruments for attending break down
- Preventive maintenance schedules.

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## 7.0 OUTPUTS

- The Rectified machines.
- Records of the Maintenance for future analysis.

## 8.0 PROCEDURE

Maintenance is organized by separate group of fitters, welders, plumbers, turners, roll grinders, electricians and helpers.

- 8.1** Whenever breakdown comes concern person attend breakdown & take necessary corrective action. Even Breakdown & non breakdown activities shall be recorded in the Format No. JAL/R&E/MAT/F/01. All breakdowns of monthly summary report will be recorded in the format No.JAL/R&E/MAT/F/02.
- 8.2** Preventive maintenance will be done as per schedule as per format No **JAL/R&E/MAT/F/07**.
- 8.3** Whenever breakdown comes more than 60 minutes will be done why why analysis as per format No JAL/R&E/MAT/F/03.
- 8.4** Machine history card will be recorded for major breakdown & major preventive maintenance in the format JAL/R&E/MAT/F/04
- 8.5** KPTCL Meter Unit consumption (Monthly) shall be recorded as per Format No. JAL/R&E/MAT/F/05 and Monthly DG Set units' generation report for last & previous months shall be recorded in the Format No. JAL/R&E/MAT/F/06.
- 8.6** The maintenance of these equipment is done in the periodicity of either monthly/quarterly/ half-yearly. In respect of air compressor the periodicity is 1000 hours. However the detailed Preventive maintenance schedule will be drawn by respective maintenance departments Which will show the exact periodicity.

## 9.0 CALIBRATION

The Calibration of Electrical (Temperature & Pressure Controllers/Indicators) and Mechanical (Pressure Gauges) Instruments is to be done by outside party & records to be maintained as per JAL/R&E/CAL/F/01.

- 9.1 The following types of instruments are identified for measuring and test equipments.

SL. NO.	MEASURE-MENTS	INSTRUMENTS IDENTIFIED	ACCURACY REQUIRED	CALIBRATION FREQUENCY
01.	Pressure	Pressure Gauge	± 5% of FSD	One Year
02.	Temperature	Temperature indicator or Controller	± 2% of FSD	One Year
03.	Weight	Weighing Scales	± 5%	One Year

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All the measuring & test equipments are listed & maintained as per format No.JAL/R&E/CAL/F/02 with details.

The Maintenance Manager is authorized for any inclusion or removal of the instruments in the list.

#### 9.2 Calibration Status:

All the inspection, measuring & test equipments are identified with a Label.

- a) Instrument Number
- b) Calibration Date
- c) Calibrated by
- d) Error
- e) Due Date

If any instrument is noticed out of order, the material inspected till then is kept separate and tests are carried out after calibrating the instrument and material is released accordingly. For such of those instruments which do not require calibration, the following label to be affixed:

CALIBRATION NOT REQUIRED
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Examples for such instruments are:

- a) P.P. Fabric Strength Tester
- b) Water Testing Equipments, Lab Equipments
- c) Volt Meters, Current Meters
- d) RO Pressure Gauge, etc.

All the test equipments, which do not have impact on our products.

#### 9.3 Environmental Condition:

All the measuring, inspection & testing equipments except Metal Analyzer (Spectrometer) are calibrated and used for inspection at room temperature. The environmental condition for the Metal Analyzer is a room installed with Air Conditioner and protected from direct sunlight & dirt. The room temperature shall be maintained at  $23 \pm 3^{\circ}\text{C}$ .

#### 9.4 Calibration Records:

The calibration records are maintained as mentioned in the Annexure JAL/R&E/MAT/ANX/02.

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## 10.0 PROCESS MONITORING

- 10.1** The Breakdowns are monitored on the daily/weekly basis and based on that, the preventive action is initiated to reduce the break down and also the preventive maintenance is rescheduled if needed.
- 10.2** The critical spares are identified and procured to reduce the breakdown hours due to Non-availability of spares.
- 10.3** The Calibration due date is monitored on a periodical basis and the instruments due for calibration is calibrated.

## 11.0 EXTERNALLY PROVIDED SERVICES

**Annual Maintenance contract (AMC):** There are certain equipments, for which maintenance dept may choose to outsource the servicing and /or maintenance. This is done through an Annual Maintenance contract (AMC). Usually the supplier of the equipment is given the AMC. The number of service visits, breakdown visits to be attended in a year will be specified in the AMC along with other relevant details. The AMC is awarded by Purchase dept. Monitoring and follow-up of the service visits is also done by Purchase dept. In case of breakdowns, Maintenance dept will inform the AMC provider directly or through Purchase dept.

**Calibration:** Electrical and mechanical Instruments like temperature indicators, controllers, pressure gauges, etc. are calibrated through outside agencies, as given under section 11 of this procedure.

## 12.0. SAFETY AND ENVIRONMENTAL REQUIREMENTS

The following safety and environmental requirements are to be followed.

01. While working, all maintenance workers shall use hand gloves to protect their hands and fingers from getting injured.
02. During fire or other accidents, immediate action should be taken. If the things do not come under control it should be informed to safety department for alarm.
03. Use safety shoes while moving on the shop floor.
04. Avoid loose clothing while working.
05. Avoid oil spillage on the floor.
06. To clean oil spillage immediately to avoid slipping and accidents.
07. While lifting load by the crane, ensure that the load is within the safe working capacity of the crane.
08. To clean the machine and take utmost care during maintenance.
09. In the event of any accident / shock, to give First Aid immediately.
10. To have full knowledge of operating the fire extinguisher in the event of fire hazards like for oil - Foam type, paper & gunny; Electrical - Carbon Dioxide and dry powder.

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11. Use sufficient light below the work area to avoid accidents.
12. In addition to above, any safety orders/instructions issued by Management from time to time, are also to be followed.

### **13.0 RISKS AND OPPORTUNITIES**

Risk & opportunity is defined as separate procedure. JAL has established, implemented & maintained this procedure for managing risk & opportunities.

### **14.0 ANALYSIS AND EVALUATION**

The following analysis is to be carried out:

- a) Major Breakdown analysis for equipment on monthly basis.
- b) Power consumption analysis.

### **15.0 CONTINUAL IMPROVEMENT**

The quality objectives are monitored for improvement during the department meeting and the current level of the objectives is noted down and target level is fixed for the next period and action plan is developed to attain the target level and monitored for improvement. The details are recorded in the format JAL/R&E/QMSC/F/01.

The effectiveness of corrective and preventive actions taken during breakdown attendance is also monitored for improvement on weekly basis & the same is recorded in format No.JAL/R&E/MAT/F/08.

### **16.0 ORGANIZATIONAL KNOWLEDGE, COMPETENCE & AWARENESS**

Training is defined as separate procedure. The purpose of this procedure is to define the requirements for positions in the company affecting quality, for hiring and training employees to ensure these requirements are met, and for evaluating the effectiveness of training provided.

List of training records is shown in the Annexure No JAL/R&E/MAT/ANX/03 & maintained by HOD.

Competency chart is identified for all position in maintenance department as per Annexure No JAL/R&E/MATANX/04.



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*The equipments which have to undergo preventive maintenance are as listed department-wise. In addition to this, the equipments common to all departments are listed under "list of common facilities". The periodicity of preventive maintenance to be carried out is also specified. The checklist giving details of check point are to be maintained for the each equipment in format No. **JAL/R&E/MAT/F/07**.*

**LIST OF MACHINES IN CAST HOUSE**

SL NO	NAME OF MACHINE	LOCATION	PERIODICITY
1	Melting furnace - 1 (15 tons)	CAST HOUSE	Monthly
2	Holding Furnace-1 (15 tons)		Monthly
3	Degasser-1		Monthly
4	Caster-1 (∅ 960 x1800mm)		Monthly
5	Roll Coiling Water Pumping unit-1 (Including 2 nos of pumps) Capacity 216 m3/h		Monthly
6	Cooling Tower with heat exchanger unit-1		Monthly
7	Melting furnace - 2 (15 tons)	CAST HOUSE	Monthly
8	Holding Furnace-2 (15 tons)		Monthly
9	Degasser-2		Monthly
10	Caster-2 (∅ 960 x1800mm)		Monthly
11	Roll Cooling Water Pumping unit-2 (Including 2 nos of pumps) Capacity 216 m3/h		Monthly
12	Cooling Tower with heat exchanger unit-2		Monthly
13	Melting furnace - 3 (15 tons)	CAST HOUSE	Monthly
14	Holding Furnace- 3 (15 tons)		Monthly
15	Degasser-3		Monthly
16	Caster-3 (∅ 960 x1800mm) with Edge Miller		Monthly
17	Roll Cooling Water Pumping unit-2 (Including 2 nos of pumps) Capacity 216 m3/h		Monthly
18	Cooling Tower with heat exchanger unit-2		Monthly
19	Melting furnace - 4 (15 tons)	CAST HOUSE	Monthly
20	Holding Furnace- 4 (15 tons)		Monthly
21	Degasser-2		Monthly
22	Caster-2 (∅ 960 x1800mm)		Monthly
23	Roll Cooling Water Pumping unit-4 (Including 2 nos of pumps) Capacity 216 m3/h		Monthly
24	Cooling Tower with heat exchanger unit-4		Monthly

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**OTHER EQUIPMENTS RELATED TO CAST HOUSE**

SL NO	NAME OF MACHINE	LOCATION	PERIODICITY
1	Nitrogen plant	Ground floor (caster-4)	Quarterly
2	Nitrogen plant	First floor (caster-4)	Quarterly
3	Nitrogen Receiver	Plant outside	Quarterly
4	Nitrogen Receiver	Plant outside	Quarterly
5	Tip oven	Tip shop	Quarterly
6	Dross Processing machine	B/N Melting 2 & 3	Quarterly
7	Screw Air Compressor 450CFM	Nitrogen plant	Monthly
8	Screw Air Compressor 450CFM	Nitrogen plant	Monthly
9	EOT crane 15 T	Foundry	Quarterly
10	EOT crane 15 T	Foundry	Quarterly
11	EOT crane 5 T	Foundry	Quarterly
12	EOT crane 20 T	Caster	Quarterly
13	EOT crane 20 T	Caster	Quarterly
14	Semi gantry crane 30 T	Foundry	Quarterly
15	Induced Draft Fan for Furnace Exhaust	Foundry	Quarterly
16	Metal Charging Bucket 7 T	Melting 1	Quarterly
17	Metal Charging Bucket 7 T	Melting 3	Quarterly

**LIST OF MACHINES IN ROLLING DEPARTMENT**

SL.NO.	NAME OF MACHINERY	LOCATION	PERIODICITY
1	WALDRICH GRINDER	SHED NO 1	Monthly
2	DAYU GRINDER		Monthly
3	WMW GRINDER	SHED NO 2	Monthly
4	LATHE MACHINE	SHED NO 2	Quarterly
5	ZHOUSHEN MILL	SHED NO 2	Monthly
6	ACHENBACH MILL	SHED NO 3	Monthly
7	ZHUOSHEN ANNEALING FURNACE-1	SHED NO 1	Monthly
8	ZHUOSHEN ANNEALING FURNACE-2	SHED NO 1	Monthly
9	ZHUOSHEN ANNEALING FURNACE-3	SHED NO 1	Monthly
10	ZHUOSHEN ANNEALING FURNACE-4	SHED NO 1	Monthly
11	TURKEY ANNEALING FURNACE NO.1	SHED NO 6	Monthly
12	TURKEY ANNEALING FURNACE NO.2	SHED NO 6	Monthly
13	SCHMUTZ SLITTER/SEPERATOR	SHED NO 5	Monthly
14	KEMPF SLITTER/SEPERATOR (TURKEY)	SHED NO 5	Monthly
15	CHINA CTL MACHINE	SHED NO 2	Monthly
16	STAMCO SLITTER	SHED NO 1	Monthly
17	TENSION LEVELER LINE	SHED NO 1	Monthly

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**LIST OF EOT CRANES IN ROLLING MILL SHED**

SL NO	MAKE	CAPACITY (TONS)	LOCATION	PERIODICITY
1	EOT Cranes-1	15	Shed No. 1	Quarterly
2	EOT Cranes-2	15	Shed No. 1	Quarterly
3	EOT Cranes-3	15	Shed No. 2	Quarterly
4	EOT Cranes-4	15	Shed No. 2	Quarterly
5	EOT Cranes-5	30	Shed No. 2	Quarterly
6	EOT Cranes-6	1	Shed No. 2	Quarterly
7	EOT Cranes-7	5	Shed No. 2	Quarterly
8	EOT Cranes-8	20	Shed No. 3	Quarterly
9	EOT Cranes-9	5	Shed No. 3	Quarterly
10	EOT Cranes-10	10	Shed No. 3	Quarterly
11	EOT Cranes-11	3	Shed No. 4	Quarterly
12	EOT Cranes-12	10	Shed No. 4	Quarterly
13	EOT Cranes-13	10	Shed No. 5	Quarterly
14	EOT Cranes-14	5	Shed No. 6	Quarterly
15	EOT Cranes-15	5	Shed No. 7	Quarterly
16	EOT Cranes-16	5	Shed No. 8	Quarterly
17	EOT Cranes-17	5	Shed No. 8	Quarterly
18	EOT Cranes-18	5	Shed No. 8	Quarterly

**LIST OF EQUIPMENTS FOR EXTRUSION DIVISION**

S/N	ITEM DESCRIPTION	LOCATION	PM PERIODICITY
<b><u>EQUIPMENTS IN PRESS AREA</u></b>			
1	EXTRUSION PRESS DP1	RCC BUILDING	MONTHLY
2	EXTRUSION PRESS DP2	RCC BUILDING	MONTHLY
3	EXTRUSION PRESS DP3	RCC BUILDING	MONTHLY
4	EXTRUSION PRESS DP4	RCC BUILDING	MONTHLY
5	EXTRUSION PRESS DP5	SHED NO 8	QUARTELY
6	AGING OVEN 1	RCC BUILDING	QUARTELY
7	AGING OVEN 2	RCC BUILDING	QUARTELY
8	AGING OVEN 3	RCC BUILDING	MONTHLY
9	FOUNDRY AREA	RCC BUILDING	MONTHLY
10	MELTING FCE 1	RCC BUILDING	MONTHLY
11	MELTING FCE 2	RCC BUILDING	MONTHLY
12	HOLDING FCE 1	RCC BUILDING	MONTHLY
13	CASTING UNIT	RCC BUILDING	MONTHLY
14	HOMOGENISING FCE 1	RCC BUILDING	MONTHLY

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S/N	ITEM DESCRIPTION	LOCATION	PM PERIODICITY
15	HOMOGENISING FCE 2	RCC BUILDING	MONTHLY
16	PRE HEATING 1	RCC BUILDING	MONTHLY
17	PRE HEATING 2	RCC BUILDING	MONTHLY
18	LOG CUTTING MACHINE	RCC BUILDING	MONTHLY
19	PUMP HOUSE WATER PUMPS	RCC BUILDING	MONTHLY
20	MATERIAL CHARGING TROLLEY	RCC BUILDING	MONTHLY

<b><u>CRANES</u></b>			
21	LOG STORAGE CRANE DP1 1TON	PRESS	QUARTELY
22	LOG STORAGE CRANE DP2 1 TON	PRESS	QUARTELY
23	LOG STORAGE CRANE DP3 1 TON	PRESS	QUARTERLY
24	LOG STORAGE CRANE DP4 1 TON	PRESS	QUARTERLY
25	PACKING PLC CRANE SHED NO 7 1 TON	PACKING SHED NO 7	QUARTERLY
26	LORRY LOADING CRANE SHED NO 7 1TON	LOADING POINT	QUARTERLY
27	3 TON CRANE SHED NO 7	PACKING SHED NO 7	QUARTERLY
28	DIE LOADING CRANE DP1	DP1	QUARTERLY
29	DIE LOADING CRANE DP2	DP2	QUARTERLY
30	DIE LOADING CRANE DP3	DP3	QUARTERLY
31	DIE LOADING CRANE DP4	DP4	QUARTERLY
32	HEAT TREATMENT CRANE	HEAT TREATMENT	QUARTERLY
33	CRANE PRESS PUMP AREA DP234	DP234	QUARTERLY
34	AGING OVEN CRANE OLD 3 TON	AGING BAY	QUARTERLY
35	AGING OVEN CRANE NEW 3 TON	AGING BAY	QUARTERLY
36	TOOL SHOP CRANE 3 TON	TOOL SHOP	QUARTERLY
37	FOUNDRY CRANE 1 MELTER AREA 3 TON	EXT. FOUNDRY	QUARTERLY
38	FOUNDRY CRANE 2 MELTER AREA 3 TON	EXT. FOUNDRY	QUARTERLY
39	FOUNDRY CRANE 3 MELTER AREA 5 TON	EXT. FOUNDRY	QUARTERLY
40	FOUNDRY CRANE 15 TON CASTING AREA	EXT. FOUNDRY	QUARTERLY
41	FOUNDRY CRANE 5 TON CASTING AREA	EXT. FOUNDRY	QUARTERLY
42	FOUNDRY CRANE 5 TON SLUG AREA	EXT. FOUNDRY	QUARTERLY
43	DIE COOKING AREA CRANE	DIE COOKING	QUARTERLY
44	MONORAIL CRANE 4 NOS	RCC BUILDING	QUARTERLY

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<b><u>TOOL SHOP</u></b>			
45	ELECTRONIKA WIRE CUT MACHINE	TOOL SHOP	AMC
46	GRINDING MACHINE	TOOL SHOP	QUARTERLY
47	LATHE MACHINE	TOOL SHOP	QUARTERLY
48	SURFACE TREATMENT MACHINE	TOOL SHOP	QUARTERLY
49	TUFRIDING FCE BIG	TOOL SHOP	QUARTERLY
50	TUFRIDING FCE SMALL	TOOL SHOP	QUARTERLY

### **LIST OF DIESEL GENERATORS**

SL NO	DESCRIPTION	PERIODICITY
1	LT Diesel Generator # 1-1250 KWA	As per norms laid down by the manufacturer, in the respective Operation and Maintenance manual.
2	LT Diesel Generator # 2-1250 KWA	

### **LIST OF COMMON FACILITIES**

SL.NO	NAME OF MACHINE	MAKE / LOCATION	PERIODICITY
1	COMPRESSOR NO. 1	INGERSOLL RAND/NEAR ZHOUSHAN MILL	Monthly
2	COMPRESSOR NO. 2		Monthly
3	COMPRESSOR NO. 3		Monthly
4	COMPRESSOR NO. 4	ATLAS COPCO/CAST HOUSE	Monthly
5	LPG PLANT	NEAR SECURITY ROOM	Monthly
6	COOLING TOWER 1-4	NEAR CANTEEN	Quarterly
7	COOLING TOWER 1-4	NEAR CASTOR	Quarterly
8	SUB WATER TANK	NEAR CANTEEN	Quarterly
9	MAIN PUMP HOUSE	NEAR CANTEEN	Monthly
10	SUB PUMP HOUSE	NEAR CASTOR	Quarterly
11	FORK LIFT 1 BATTERY 2TON	PACKING DEPT	Quarterly
12	FORK LIFT 2 BATTERY 2TON	STORE	Quarterly
13	FORK LIFT 3 DIESEL 5 TON	PRODUCTION VARIA	Quarterly
14	FORK LIFT 4 DIESEL 10 TON	PRODUCTION SLITTER	Quarterly

**NOTE:** The above maintenance shall be carried out if machines are operated during that period otherwise, maintenance shall be done according to the production planning.

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#### LIST OF RECORDS

Type of Records	Format Reference	Responsible Person	Retention Period (Min)
1. Daily Log Book	JAL/R&E/MAT/F/01	} Maint-HOD	6 months
2. Monthly Breakdown details	JAL/R&E/MAT/F/02		1 year
3. Why Why analysis- Breakdown	JAL/R&E/MAT/F/03		1 year
4. Machine history card	JAL/R&E/MAT/F/04		1 year
5. KPTCL Meter Unit Consumption	JAL/R&E/MAT/F/05		1 year
6. DG Set Units Generation Report	JAL/R&E/MAT/F/06		1 year
7. Preventive Maintenance check sheet	<b>JAL/R&amp;E/MAT/F/07</b>		1 year
8. Quality Objectives monitoring record	JAL/R&E/QMSC/F/01		3 Years

#### CALIBRATION RECORDS

Type of Records	Format Reference	Responsible Person	Retention Period
a. Calibration Certificate	Certificate as supplied by party	} Maint-HOD	2 Years
b. List of instruments & Calibration Record	JAL/R&E/CAL/F/01		2 years

#### TRAINING RECORDS

Type of Records	Format Reference	Responsible Person	Retention Period
a. Employee details	JAL/R&E/TRG/F/01	} Maint-HOD	Till end of service
b. Training needs identified	JAL/R&E/TRG/F/02		1 year
c. Record of Training Imparted	JAL/R&E/TRG/F/03		1 year
d. Review of training Effectiveness	JAL/R&E/TRG/F/04		1 year

**Note:**

The computer generated documents (soft copy) will not be having the signature of the generating department. However, if a hard copy is taken out, it has to have signature of the concerned person.

JINDAL ALUMINIUM LIMITED (ROLLING & EXTRUSION DIVISION)		
<b>TITLE: PROCEDURE FOR MAINTENANCE</b>		
Doc.No.:JAL/R&E/MAT/ANX/03	Rev. No:00	Date : 01.07.2017 Page # 14

### COMPETENCE CHART

Name of department: MAINTENANCE			
IS/ISO 9001:2015 clause number 7.2			
SI.No.	Position	Required qualification*	Experience required
1	GM-Maintenance	BE/BTech in Mechanical/ Electrical	15 Years
2	DGM/AGM – Rolling	BE/BTech in Mechanical/ Electrical	12 Years
3	Sr Manager - Maint	BE/BTech in Mechanical/ Electrical	10 Years
4	Manager - Maint	BE/BTech in Mechanical/ Electrical	10 Years
5	Dy. Manager - Maint	Dip in Mechanical/ Electrical	06 Years
6	Asst Manager -Maint	Dip in Mechanical/ Electrical	04 Years
7	Engineer	Dip in Mechanical/ Electrical	03 Years
8	Supervisor	Dip in Mechanical/ Electrical	02 Years
9	MT	Dip in Mechanical/ Electrical	00 Year
10	Mechanic	ITI	02 Years
11	Helper	-	00 year
*Note: Relaxation in qualification can be given in case the candidate is having sufficient experience in relevant field.			
Prepared by: HOD		Approved by: GM(C)	





<b>JINDAL ALUMINIUM LIMITED ROLLING &amp; EXTRUSION DIVISION</b>	
<b>Rev No:00</b>	<b>Rev Date:01.07.17</b>

**MONTHLY BREAKDOWN REPORT**  
(FORMAT No. JAL/R&E/MAT/F/02)

SL No	Date	Start time	End time	Nature of breakdown	Downtime	Work executed	Preventive action
1							
2							
3							
4							
5							
6							
7							
8							
9							
10							

Total Breakdown:  
% of Breakdown:

RETENTION PERIOD: 1 YEAR

<b>JINDAL ALUMINIUM LIMITED ROLLING &amp; EXTRUSION DIVISION</b>	
<b>Rev No: 01</b>	<b>Rev Date:18.08.18</b>

**WHY WHY ANALYSIS SHEET – BREAK DOWN**

(FORMAT No JAL/R&E/MAT/F/03)

Dept :		Date:		
Machine/Equipment:		B/D Timing:		
Breakdown attended by:		Total B/D Hrs:		
Report Submitted by:		ROOT CAUSE	Yes	No
Breakdown Phenomenon:		1. Poor Basic Conditions		
Explain Why problem occurred		2. Poor operating Condition		
		3. Deterioration		
WHY 1:		4. Weak Design		
WHY 2:		5. Poor Skill		
WHY 3:		WHAT ACTIONS TO BE TAKEN ( Tick)		
WHY 4:		Kaizen Idea		
Root cause:		PM Calendar Update/Entry		
Final Action:				
Preventive action to be taken:				
In Case of Spare Parts Replacement	YES	NO	IF YES.DETAILS	
Previous Occurrence	YES	NO	What action taken	
<b>Reviewed by : Mech /Elect Maintenance Head</b>				

**Note: Why Why analysis is applicable if breakdown more than one hour.**

**RETENTION PERIOD: 3 YEARS**



<b>JINDAL ALUMINIUM LIMITED ROLLING &amp; EXTRUSION DIVISION</b>	
<b>Rev No:00</b>	<b>Rev Date:01.07.17</b>

**KPTCL METER UNIT CONSUMPTION**  
(Format No.JAL/R&E/MAT/F/05)

Meter Code	Meter Name	Date	MF	Previous KWH Reading	Current KWH Reading	Units Consumed	Max. Demand	Power Factor	Remarks

Prepared by:

Checked by:

Retention period: 1 year

<b>JINDAL ALUMINIUM LIMITED ROLLING &amp; EXTRUSION DIVISION</b>	
<b>Rev No:00</b>	<b>Rev Date:01.07.17</b>

**DG SET UNITS GENERATION REPORT FOR THE MONTH**  
(Format No.JAL/R&E/MAT/F/06)

Details	H.S.D.
Rate per Ltr (Rs)	
Percentage (%) Used	

FUEL RATE PER LTR =

SI No	Details	D.G. Set No.1		D.G. Set No.2	
		Last Month	Previous Month	Last Month	Previous Month
1	KWH Reading				
2	Units Generated				
3	Fuel Consumption				
4	Hours Reading				
5	No. of Hours Run				
6	Units per Ltr				
7	Cost per Unit (Rs)				

Details	Last Month	Previous Month
Total units generated		
Total fuel consumed		
Average unit per Ltr		
Cost per Unit (Rs)		

REMARKS (If any):

Prepared by:

Checked by:  
HOD-Maintenance

Retention Period: 1 Year.

<b>JINDAL ALUMINIUM LIMITED ROLLING &amp; EXTRUSION DIVISION</b>	
<b>Rev No:01</b>	<b>Rev Date:02.11.18</b>

**PREVENTIVE MAINTENANCE RECORDS**

Format No: JAL/R&E/MAT/F/07

MACHINE/EQUIPMENT NAME:

FREQUENCY:    MONTH:     QUARTERLY:     HALF YEARLY

1) ELECTRICAL

2) MECHANICAL & HYDRAULIC

Sl. No.	Description / Check Points	Work done	Remarks

CHECKED BY:

APPROVED BY:

**RETENTION PERIOD: 1 YEAR**







<b>JINDAL ALUMINIUM LIMITED</b> <b>ROLLING AND EXTRUSION DIVISION</b>	
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**EMPLOYEE DETAILS**

Format No.JAL/R&E/TRG/F/01

Div Code:  
Name:  
Sex:

Dept. Code :  
D.O.B:

Staff Code :  
Designation:  
D.O.J. :

Educational Qualifications	Year	Current knowledge (Professional Training)	Year
Previous Experience			
Nature of Job		Duration	
Promotions		Year :	
Training & Additional knowledge			
Programme	Duration	Conducted By	Remarks

DEPT. HEAD





<b>JINDAL ALUMINIUM LIMITED</b>	
<b>ROLLING &amp; EXTRUSION DIVISION</b>	
<b>Rev. No.: 00</b>	<b>Rev Date: 01.07.2017</b>

**REVIEW OF EFFECTIVENESS OF TRAINING**

Format No: JAL/R&E/TRG/F/04

**DEPARTMENT:**

Sl No	Name	Topic	Effectiveness Criteria	Excellent	Good	Average	Poor	Date of Review	Sign of HOD
1			Job performance						
			Knowledge & Communication skill						
			Attitude						
2			Job performance						
			Knowledge & Communication skill						
			Attitude						
3			Job performance						
			Knowledge & Communication skill						
			Attitude						
4			Job performance						
			Knowledge & Communication skill						
			Attitude						
5			Job performance						
			Knowledge & Communication skill						
			Attitude						
6			Job performance						
			Knowledge & Communication skill						
			Attitude						
7			Job performance						
			Knowledge & Communication skill						
			Attitude						

Prepared By

Approved By

Note: Effectiveness of Training will be reviewed by concerned HOD after 2 months of training.

Retention Period: One Year