STEEL AUTHORITY OF INDIA LTD
RAW MATERIALS DIVISION
KOLKATA

OFFICE ORDER

Ref : RMD/C/MAINT/06/ 04/ 156 Dated 06-07-06

The present method of calculating Availability% & Utilisation% is as per the office order office order RMD/C/ED(M)/04/718 dated 8/5/1996. The current practice or methodology for calculating Availability & Utilisation is not technically correct as there are chances of getting more than 100% availability for a equipment which is not possible. Also it is not easy to calculate the actual hour for which a equipment is available in a particular shift / day /month from the Availability% figure obtained from the present method.

Hence the present method of calculating Availability%, Utilsation% and Operational Utilisation% has been changed with the approval of competent authority. The standard practice or methodology for calculating Availability & Utilisation% prescribed by Uniform Cost Committee formed vides Office Order no. SAIL/Tech/(Input) dated 20/10/1986 is to be followed w.e.f. 01-04-06.

Method based on Uniform Cost Committee

For Calculation of Availability & Utilisation Total Fleet is to be considered

Schedule Hrs	= No of Working Days X 16 hrs For Two Shift Operation = No of Working Days X 24 hrs For Three Shift Operation
Available Hrs	= Schedule Hrs - Breakdown Hrs
Availability %	= [Available Hrs / Schedule Hrs] X 100
Utilised Hrs	= [Available Hrs - Idle Hrs]
Utilisation %	= [Utilised Hrs / Available Hrs] X 100
Net Utilisation%	= Availability X Utilisation % = [Utilised Hrs/ Schedule Hrs] X 100

There would not be any change in method in calculating the idle hour, breakdown hr etc. But if equipments are utilised on holidays or maintenance shift then the clock hour for that shift to be added to overall schedule hour i.e. the particular shift would be added with other normal shift. There would not be any concept of available factor & extra available hours and any working on Sunday or maintenance shift will be considered as normal schedule shift.

The norms have been fixed considering the various factors like shift delays, schedule maintenance, preventive maintenance, breakdown etc and therefore mines must ensure that there is no over & under working of equipment. Mines should follow this method to calculate Availability% & Utilisation% for individual equipments month wise and reason for deviation from Norm should be recorded.

The norms suggested for Two & Three shift operation for different equipments is given below.

Norm for Two Shift Operation

Sl No.	Equipment	Availability %	Utilisation%
1.	Rear Dump Dumpers 35 Te	65	75
2.	Rear Dump Dumpers 50 Te	70	75
3.	Electric Excavators upto 4.6 M^3 Capacity	75	60
4.	Electric Hydraulic Excavators above 4.6 M^3 Capacity	75	65
5.	Diesel Excavators upto 4.5 M^3 Capacity	65	60
6.	Diesel Excavators above 4.5 M^3 Capacity	70	65
7.	Diesel Driven Blast Hole Drill upto 150mm Dia	60	70
8.	Electric Driven Blast Hole Drill upto 150mm Dia	70	70
9.	Dozers upto 410 HP	60	70
10.	Ore Dressing Plants	85	85

Norm for Three Shift Operation

Sl No.	Equipment	Availability%	Utilisation%
1.	Rear Dump Dumpers 35 Te	60	75
2.	Rear Dump Dumpers 50 Te	65	75
3.	Electric Excavators upto 4.6 M^3 Capacity	70	60
4.	Electric Hydraulic Excavators above 4.6 M^3 Capacity	70	65
5.	Diesel Excavators upto 4.5 M^3 Capacity	60	60
6.	Diesel Excavators above 4.5 M^3 Capacity	65	65
7.	Diesel Driven Blast Hole Drill upto 150mm Dia	60	70
8.	Electric Driven Blast Hole Drill upto 150mm Dia	65	70
9.	Dozers upto 410 HP	60	70
10.	Ore Dressing Plants	80	85

The mines must consider the all the equipments in the fleet for calculating the Availability% & utilization% and hence the mines should fix the number of equipments that would be considered for calculating the fleet strength. The mines should follow this method to calculate the number of equipments required to meet the excavation target. In case where a particular equipment is under breakdown for more than 3 months or under major revamping then the same equipment should be excluded from the fleet. The mines must start sending the data in the new format which is enclosed for your kind perusal.

The above system / methodology of calculation will be uniformly applicable in all mines under RMD w.e.f 1/4/2006. Also it is suggested that the mines should calculate Availability & Utilisation% of all HEMM for the year 2005-2006 for comparison purpose with the present year figure.

Illustration (Method for Calculating Availability% & Utilisation%)

Given below is an illustration for calculating Availability & Utilisation

Schedule Hrs	Extra Schedule Hrs	Total Schedule Hrs	Break Down Hrs	Actual Available Hrs	Idle Hrs	Actual Utilised Hrs	Availability %	Utilisation %
1	2	3=2+1	4	5=3-4	6	7=5-6	8=5/3*100	9=7/5*100
400	16	416	100	316	50	266	75.96	84.18

Schedule Hrs = No. of Working Shift per Day X No. of Working Day X 8 hrs

Assumptions

- Suppose Mines operate one shift each on two Sunday during the month then the schedule hrs for Sundays would be added to the overall schedule hour.
- The breakdown hrs occurring in that extra shift would be added with that of breakdown hours for other schedule shift
- Similarly Idle hours occurring in that extra shift would be added with that of idle hours for other schedule shifts.
- In case mines operates only half of the shift especially in maintenance shift where production is normally operated for 4 hrs then mines should add only 4 hrs to that extra schedule hrs

(B. K. Malik)
GM(Maint)
RMD, Kolkata

Distribution

1. ED I/C, RMD,
2. ED, RMD
3. Head of Mines ⟶ Sri S.P. Guha Bolani
4. Head of Maintenance