



ANDHRA PRADESH STATE ROAD TRANSPORT CORPORATION

No. PRD1/791(2)/2009-MED

O/o The VC&MD,
Hyderabad-624.

Circular No. 13/2009-MED dt. 27.06.2009.

SUB: TARGETS - Performance of Aggregates - Measures to increase the performance of aggregate units - Reg.

REF : 1) Circular No.5/2009-MED, dt.1.4.2009.
2) Circular No. 24/2000-MED, dt.24.6.2000.

Of late it is observed that required attention is not being paid on improving the Aggregates' performance which goes in a long way in reducing the overall maintenance cost. Corporation is spending around Rs.93 crores per annum on Workshops with cost of 40 paise per km. One paise CPK reduction in a year results in a saving of around Rs. 2.3 crores which is more than the MED budget of Rs.2.00 crores meant for Depot garages and Workshops Tools & Machinery upgradation/expansion. Thus the need for improving Aggregates' performance is established.

Further the present circumstances of depleting manpower in workshops also emphasize the need to reduce the production demand by improving aggregate lives. This can be achieved only with the improvement in quality of overhaul, co-ordination of workshops with the depots for better maintenance practices, effective preventive maintenance at depots and the involvement of vehicle manufactures time to time in improving the skills and systems at both the Workshops and Depots.

The CO Aggregates' performance against the respective new stage performance is analyzed and for an instance, Engine life for the year 2008-09 is summarized hereunder.

Engine Life	ZONAL WORKSHOPS									CORP
	VJA	VZM	KDP	TPT	TATA AREA	UPL	KRMR	NLR	A/L AREA	
New Life	8.42	6.67	7.66	6.50	7.42	6.19	8.19	7.85	6.93	7.19
CO Life	3.04	2.95	2.41	2.43	2.69	2.98	4.29	4.19	3.71	3.09
% of CO Life	36	44	31	37	36	48	52	53	54	43

As seen above, there is wide variation in Engine CO lives among the workshops which can be mainly attributed to the quality of overhauling and the coordination of Zonal/Regional Workshops with the respective depots for pruning the maintenance systems to avoid early failures. It can be concluded from the above analyzed data that there is ample scope to improve the performance of CO Engines. In TATA area, ZWS/VZM is getting 44% of new life as CO life whereas ZWS/KDP is with only 31%. Similarly in A/L area, ZWS/NLR is getting 53% of new life as CO life whereas ZWS/UPL is with only 48%.

As such a minimum performance target can be fixed on CO life of an aggregate as the percentage of new life of the same aggregate and steps can be taken at workshop level in a systematic manner to achieve the target. Accordingly Engines, FIPs, Gear boxes, Self starters and Alternators are taken for this purpose. Front axles and Rear axles are excluded as the new life of the same are almost touching the vehicle stipulated life and accordingly the demand is not alarming. Therefore 60% of new life is taken as target for measuring CO aggregates' performance and accordingly the revised Targets are arrived for the year 2009-10 and given hereunder. The targets communicated vide the circular no.5/2009 cited at 1st reference are modified only to the extent of aggregate CO lives.

ZONES	ENGINE	FIP	GEAR BOX	ALTERNATOR	SELF STARTER
	LIFE IN LAKH KMS				
HYD (U)	3.51	1.75	3.91	3.07	3.16
HYD ®	3.86	2.63	4.33	3.34	3.53
KRMR	4.91	2.86	5.57	4.01	4.30
NLR	4.71	3.19	6.41	3.87	3.95
LEY. AREA	4.16	2.41	4.87	3.47	3.55
VJA (U)	5.00	2.74	3.92	2.50	3.44
VJA ®	5.06	2.50	4.30	2.50	3.65
VZM (U)	4.39	2.75	3.13	2.58	3.09
VZM ®	3.96	2.68	4.03	2.70	2.29
KDP	4.60	2.23	4.45	2.87	3.94
NLR (CTR)	3.90	1.78	2.38	2.62	3.49
TATA AREA	4.45	2.37	3.82	2.66	3.43

Any increase in Aggregates' life will reduce the drawal of such aggregates, thereby the production demand. Thus any effort to increase the life of above mentioned aggregates is going to result in substantial savings to the Corporation. During the year 2008-09 upto FEB'09, Corporation incurred an expenditure of Rs. 80.22 crores on Workshops with CPK of 39 paise/km. If the revised targeted lives are made applicable for the year 2008-09, the expenditure would have been Rs.77.55 crores only on Workshops with CPK of 35 Paise/km. Thus the CPK would have come down by 4 paise/km resulting in saving of Rs. 9.96 crores to the Corporation.

Important **guidelines**, already stipulated in different circulars, are reiterated hereunder for the benefit of Field Managers and their teams to achieve the minimum performance targets in case of overhauled **Engines, FIPs, Gear boxes, Self starters and Alternators**.

Workshops

- It shall be ensured by the WMs that **prematurely failed aggregates shall be stripped and the causes to such failures be analyzed by the committee consisting of Works manager and the concerned Dy. chief mechanical engineer.**
- **Proper record** shall be maintained at Workshops on the details of **PF analysis** so as to establish trends and to take necessary preventive steps.
- Action shall be taken by the **Dy.CME and WM** respectively in case the causes are maintenance lapses at Depots and improper overhauling practices at Workshops.
- **WM shall address letters to the concerned DMs on the causes and action to be taken to prevent such failures** in case of both the PFs and failures at low life due to maintenance lapses at Depots.
- In case of **repeated or serious maintenance lapses, concerned DM and AE (mech) shall be called and counseled during PRC meeting.**
- In case the cause is **defective material/spare, suitable action shall be taken by the WM** to avoid receipt of such material in future.
- **All the CO aggregates Engines, Gearboxes, Self starters, Alternators, Power steering boxes, Brake Units, etc, shall be tested on respective test benches as per the stipulated procedure, for their performance before being dispatched to Depots. Updation of testing equipments shall be taken up wherever necessary to meet the requirements.**
- In case of **engines**, it shall be ensured that **tappet setting and cylinder head bolts tightening** are done before dismounting the engine from the test bench.
- All the **fitments like air intake system, cooling system, etc shall be ensured at Engine Test bench.**
- Before dispatching, all the aggregates shall be ensured that **no peripheral parts are missing.**
- The **CO engines** shall be dispatched invariably along with **Air cleaners.** Timely and Adequate supply of Sub assemblies shall be ensured which will enhance the life of Engines.
- The **CO engines and FIPs** shall be invariably ensured of **plugging with plastic caps to avoid dust entry, wherever necessary.**

- The **CO Gear boxes** shall be ensured with **fitment of Muff bearing sub-assembly, including grease pipes.**
- WMs shall ensure **skills improvement** in line with the ever changing models and assembly practices, taking the assistance of Vehicle manufacturers/OE suppliers.
- WMs shall ensure effective implementation of **Stage wise inspection** in assembly line. **Job cards** shall be utilised effectively for this purpose.
- **Quality of Retrieving** shall be ensured by obtaining **performance feedback** on retrieved parts and taking corrective action.
- **The system of procuring/retrieving spares coupled with using serviceable parts and then producing assembly shall be reviewed.** In certain cases, the ECONOMICS may lead to more advantages if assemblies are procured at Buyback prices/special discount prices. **PRCs and LFCs shall be utilised for this purpose effectively.**
- WMs shall ensure **working of all machinery, Jigs & Fixtures and Special Tools** at shop floor to their highest efficiency levels. **Timely Repairs/replacements/updation**, if necessary, shall be taken up on priority without further loss of time, to ensure **qualitative machining, fabrication, etc.**
- **Innovative Ideas** on reducing the cost of overhaul shall be invited and encouraged.
- WMs shall ensure **process improvement** in assembly line by way of **Mechanization and Automation** wherever necessary.
- Ensuring **Clean and Hygienic conditions** at shop floor will go in a Long way in improving the morale of the employees and in creating **conducive environment for improving overall productivity.**

Depots

- Effective implementation of stipulated **preventive maintenance schedules** shall be ensured by the Depots.
- Depots shall **not cannibalize the aggregates** while sending the same to respective Workshops.
- **Aggregates with premature failures and with less life** compared to average CO life the Depot shall be sent to Workshop **along with failure analysis report by the Depot Manager.** Feedback shall also be obtained from Workshop for taking corrective action at Depot.
- Premature failure joint inspections at Workshops shall be invariably attended by the Depot Managers.

- Depots shall not resort to any cannibalization of the CO aggregates received from the Workshops.
- In case of **Engines**, the following tasks have to be taken up at 1000 km. of operation after CO.
 1. Tappet setting as per the standards.
 2. Cylinder head bolts tightening to the required torques.
 3. Change of Engine oil.

The **Executive Directors** of the Zones are requested to prune the Depot maintenance activities and Workshop overhauling practices to **improve the life span of the aggregates/ subassemblies**, thereby reducing the overall maintenance cost. **Timely availability of spares at Stores** shall be ensured to avoid any dislocation in maintenance and overhauling activities. The **Production Review Committee meetings** shall be effectively conducted for this purpose.

The **Regional Managers** are advised to prune the Depot maintenance activities by utilizing the services of Dy.Chief Mechanical engineers effectively. **Effective and result oriented Depot inspections** and **proper coordination** with the Workshops shall be ensured. This subject shall be reviewed in the periodical review meetings with Depot Managers and Maintenance Incharges and **healthy increasing trends in the performance of Aggregates** are expected in the coming months.



Vice Chairman & Managing Director

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