Andhra Pradesh State Road Transport Corporation

Mechanical Engineering Department

Office of the VC & MD, RTC House, Vijayawada –13.

No : OP2/581(14)/2019-MED

CIRCULAR No: 14/2019-MED, Dt.06.11.2019

Sub: **HSD KMPL** - Observance of '**Fuel Saving Campaign Fortnight**' from **16th Nov' 2019 to 30th Nov' 2019** - Certain instructions issued – Reg.

1. INTRODUCTION:

1.1 The expenditure on HSD Oil is the second highest operating cost after personnel cost. APSRTC incurred an expenditure of Rs.1635 Crore during the year 2018-19 towards purchase of HSD Oil.

1.2 The HSD KMPL of the corporation, of late, has been showing negative trend for various reasons. The HSD KMPL (Excl. AC) at Corporate level up to October, 2019 is 5.21 against 5.31 up to October, 2018. Thus the HSD KMPL dropped by 0.10. This has resulted in an additional expenditure of 29 Cr. at corporate level on Fuel.

1.3 Any effort made in conserving the precious HSD oil reduces operating expenditure as well as saving in precious foreign exchange in a big way.

1.4 Though adequate guidelines are available on Technical, Operational, Managerial controls and Motivational measures; the unit officers are not bestowing personal attention for improving the HSD KMPL. It is a known fact that the following aspects play a vital role in improving the HSD KMPL.

i) Identification and attention of Buses with low and negative trend in HSD KMPL.

ii) Identification and counseling /training/admonishing of Drivers with low and negative trend in HSD KMPL.

iii) Motivational & awareness campaigns like awards presentation and incentives for achieving targets.

1.5 During the inspection of the Depots it has been observed that adequate attention is not given for the above aspects. The identification of low KMPL vehicles is left to the discretion of the KMPL Mechanic which has been resulting in lack of prioritizing and analytical approach. At some places the work of the KMPL Mechanic is not reviewed by DM / Garage In-charge for effectiveness. The HSD KMPL Mechanic is diverted to other jobs like attending to top overhauls, en-route breakdowns etc.

1.6 Counseling of drivers is very important and cannot be carried out as a matter of routine. Identification of Drivers is also another important activity for focused and result oriented counseling. In view of criticality, this aspect cannot be re-delegated to lower cadre. Picking up wrong driver for counseling and follow up pays negative dividends. Hence utmost care has to be taken in identifying the drivers of low KMPL.

1.7 Review of type-wise/ engine-wise HSD KMPL up to October, 19 reveals that the misconception on fuel performance of BS-III/IV vehicles still persists at many places and there is every need to elude the myths on the performance of BS III/BS IV vehicles completely so that the Corporation can achieve the target in HSD KMPL with the improvement in BS III/BS IV KMPL.

2. OBSERVANCE OF - 'FUEL SAVING CAMPAIGN FORTNIGHT'

As there is vast scope for improvement of fuel performance of buses especially on BS III/ BS IV & other high end vehicles, it is proposed to organize a special campaign for a complete fortnight on creating awareness on getting the best fuel performance.

This fortnight is called as 'FUEL SAVING CAMPAIGN FORTNIGHT' commencing from 16th November 2019. The basic objective of this campaign is aimed at achieving the maximum fuel efficiency especially from BS III/BS IV vehicles by creating awareness among the field staff, by providing the required technical inputs, strengthening the maintenance and providing material support from the stores/ workshops.

3.0. THE OBSERVANCE OF 'FUEL SAVING CAMPAIGN FORTNIGHT' SHALL BE MADE ON THE FOLLOWING BROAD GUIDELINES:

3.1. EDUCATION

Organize intense publicity campaign by distributing the pamphlets & display of flexi banners etc informing about:

a) the current Diesel prices, CPK on fuel of the Depot and its percentage on total expenditure.

b) the impact of 0.10 improvement in HSD KMPL of Depot on the overall performance of the Depot and saving in terms of amount.

c) the scope for improvement in HSD KMPL at depot and especially on BS III/BS IV vehicles by displaying the highest KMPL achieved by these vehicles in the Depot and at Regional level.

d) the Momentum mode driving methods - i.e. the engine power has to be utilized to attain optimum speed and there after the vehicle has to run in cruising speed by utilizing vehicle momentum (**"Sizzling"** sound of the Engine can be observed at this stage) keeping accelerator pedal in Power point position (i.. at no.3 position shown in Fig. A).

e) moving the vehicle only in 1st gear without giving acceleration (since BS III & BS IV vehicles are equipped with high torque engines) and later change to top gear gradually and as quickly as possible. It takes only 60 seconds to change from 1st gear to Top gear, where as 120 seconds time is required to shift to Top gear if vehicle is moved from 3rd gear instead of from 1st gear.

f) Avoid shifting to the lower gears unnecessarily without judging the vehicle momentum. BS III/BS IV vehicles have high-torque engines. Even if the vehicle is slowed down in 5th gear, it picks up the desired momentum by giving

incremental acceleration without shifting to lower gears. Hence, the frequency of gear changes are very minimal in BS III/BS IV vehicles thereby more fuel is saved.

g) Acceleration by soft touch – Illustrating total pedal travel in terms of angle in degrees and explaining the range of speed that can be achieved in different gears by pressing the pedal from 45 to 0 degrees of angle.

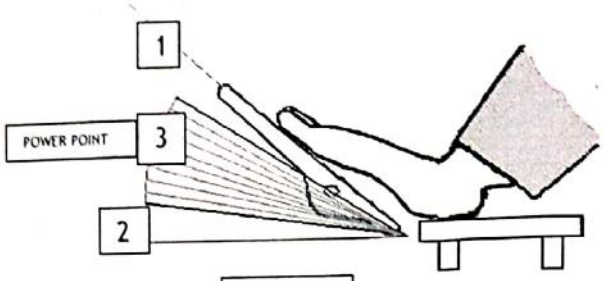

Fig: A

Emphasize that pressing the pedal unnecessarily to zero degree position (Flat-position 2 in Fig. A) when there is no demand for power from wheels (which are rotating at slow speed) is mere waste of fuel.

h) The vehicle cannot jump from 40 kmph speed to 60 kmph all of a sudden even if the accelerator pedal pressed to flat. It takes enough time for the wheels to attain the desired speed from the existing speed. But, keeping the pedal pressed in flat condition allows the FIP & injectors to spray more fuel into the cylinders which is mere waste. Therefore, acceleration shall always be given in smallest possible increments in a gradual manner for getting maximum economy of fuel.

i) The following figures B & C illustrates how the fuel is injected at different positions of the accelerator when the driver desires to increase the speed from 40 kmph to 60 kmph in 5th gear.

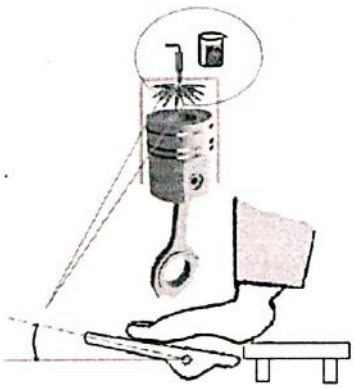

Fig: B
Pedal pressed to flat position at once, injecting more fuel into engine cylinder

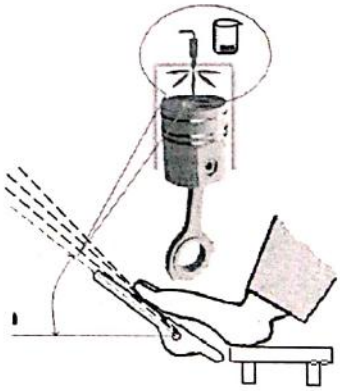

Fig: C
Pedal pressed gradually from 45° to 40 °, 35 ° and so on without injecting much fuel

j) Effective utilization of **Protech Machine** for training of drivers on the fuel conservation by showing them practically the quantity of fuel delivered in a fixed time through the injector in protech machine in three different operating conditions like:

i. pressing the pedal in full throttle and holding it there firmly

ii. pressing the pedal with small increments up to medium position and holding it in power point (position 3 in Fig. A) and

iii. pumping the accelerator pedal regularly.

The difference of the quantities delivered in all the above three cases may visibly be shown to the drivers to understand the savings that can be made, through operation of accelerator pedal smoothly and holding in power point position (position no. 3 of figure) as compared to unnecessarily pressing down the accelerator pedal at lower speeds and also pumping the accelerator pedal.

k) Use of RPM meter while driving (wherever available) and maintaining the engine RPM within the Green band in all gears(Fig: D)

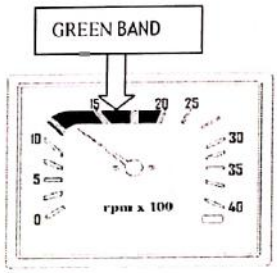

Fig: D

l) Judicious application of brakes. Slowing down the vehicle without applying the brakes by anticipating the stops

m) Avoid long idling at bus stations and bus stops.

n) Technical aspects that influence the fuel performance

o) Exhibition of "**Pancha Sutraas**" at 2 or 3 Conspicuous places in the Depot (Garage and Traffic section) and ensure recital by drivers while going for duty and also at the time of incoming:

పంచసూత్రాలు

1. ఏక్సిలరేటర్ ఇచ్చునపుడు, ఏక్సిలరేటర్ ను తన్నినట్లు కాకుండా, తాకినట్లుగా ఇవ్వవలెను.
2. బస్సును తప్పనిసరిగా 1 వ గేర్ లోనే మూవ్ చేసి, 2 మరియు 3వ గేర్ లు త్వరితంగా మార్చుకుంటూ, బస్సు టాప్ గేర్ లో నిర్దిష్ట వేగము చేరిన తరువాత ఏక్సిలరేటర్ పెడల్ ను కొద్దిగా వెనుకకు తీసి పవర్ పాయింట్ పొజిషన్ లో పట్టుకొనవలెను.
3. ఏటవాలుగా ఉన్న రోడ్లపైన ఏక్సిలరేటర్ పెడల్ పై నుండి కాలు పూర్తిగా తీసివేయవలెను.
4. ప్రతి స్టేజీకి ఒక ఫర్లాంగు ముందుగానే ఏక్సిలరేటర్ పై నుండి కాలు తీయవలెను.
5. కంటి చూపునే బ్రేక్ గా వాడవలెను. తరచూ బ్రేక్ వాడకుండా, అత్యవసరమైనపుడే బ్రేక్ వాడాలి.

3.2. DRIVERS TRAINING & PRACTICAL DEMONSTRATIONS

a) Chalk out a precise schedule for training all the Drivers who operate BS III/BS IV vehicles prioritizing the drivers based on individual HSD KMPL duly starting with the lowest KMPL drivers operating these buses.

b) The Training consists of two parts and will be of half a day duration program

c) A minimum of 10 low kmpl drivers shall be drafted among the drivers availing weekly off. During the first session of one hour duration the Depot Manager shall address the drivers about the fuel conservation techniques on BS III/BS IV vehicles duly displaying the 'Indhanam' video [The video is available in RTC WAN in CMEM folder] and also motivate them.

d) Second session will be a practical session and online training shall be conducted by drafting one of the best HSD KMPL driver identified in the depot level. The driver so identified as trainer must be capable of communicating well with the targeted group while training them.

e) The Dy.CME of the region shall address the Drivers at least one session at each depot during the fortnight.

3.3. VEHICLE MAINTENANCE

Special attention shall be paid to rectification of defects in the following systems, especially on BS III/BS IV vehicles during this fortnight with due focus on improvement of HSD KMPL:

a) Identify the BS III/BS IV vehicles which are consistently giving low HSD KMPL irrespective of the Driver and route operated. Test drive the vehicle by the identified high KMPL driver along with the KMPL Mechanic & Maintenance Supervisor, find out the reasons for low KMPL and rectify them.

b) Carry out 100% inspection of the following items on BS III/BS IV vehicles:

- Engine: Engine tuning - Idling r.p.m, Valve clearance (Tappet adjustment), Injector pressure, FIP timing: spill cut off/ plunger lifting, Injector back leak test for BS-IV Engines, Cylinder Head nuts tightness (wherever applicable), engine compression etc.,
- Air intake system: Air Filters condition, working condition of Red band Indicator, Turbocharger condition, condition of hose pipes, Exhaust back pressure, etc
- Fuel System: Fuel leakages, condition of strainers/Baby filters/Fuel water separators & Fuel filters.
- Cooling System: Viscous Fan working condition, Availability of Radiator Pressure Cap of recommended Pressure, Thermostat availability and working condition and Radiator flushing, condition of radiator hoses etc.,.
- Clutch System: Condition of Clutch plate, pressure plate, flywheel, release bearing, Clutch pedal free play and condition of linkages master cylinder, slave cylinder , clutch booster etc.
- Condition of Gear Box , Gear shifting mechanism and linkages
- Brakes: condition of Air compressor, Air building time, Air leakages, Brake binding/Jam, Brake rolling, hand brake working condition, Retarder working condition where ever applicable., Air pipe connection from & to DB Valve.
- Tyres condition and Inflation pressures
- Ensure dry hub setting using dial gauge with magnetic base, for all vehicles and Free rolling of Hubs and wheels
- Wheel alignment and wheel balancing in case of vehicles with air suspension
- Electrical System: Self and Alternator working condition, condition of Battery & battery box, Head Lights, signal lights & Wind screen wiper working condition
- Visibility of Windscreen glass, vision mirror
- Condition of Driver Seat & seat adjustment mechanism
- Working condition of RPM meter
- Condition of Accelerator pedal and its linkages and Provision of proper foot rest near the pedals in Driver'scabin
- Chassis lubrication
- Attention of air suspension bellow static height as specified through templates
- Any other relevant items connected to improvement of HSD KMPL.

c. Check the working condition of Injector Pressure Tester, Torque wrench, Magnetic based Dial Gauge, Tyre pressure gauges and get them calibrated if required, working condition of Tyre Inflation Bays

d. Check availability of feeler gauges with all mechanics, replace if worn out.

e. Draw the required spares & units for kmpl improvement from the Zonal Stores/ Zonal Workshops by planning in advance

f. Monitor the performance of vehicles. Obtain the feedback from the drivers and review the performance of the vehicle after attention on daily basis during the fortnight

3.4. TRAINING AT ZONAL WORKSHOP

Works Managers shall organize training programs at Zonal Workshop duly involving one KMPL Mechanic and one Engine Mechanic from each depot. During the training program they shall be educated, through demonstration and hands on training, on the maintenance practices especially on Engine tuning and Fuel Injection Equipment maintenance, spill cut off, plunger lift adjustment etc., and also DOs and DON'Ts.

3.5. COUNSELLING OF DRIVERS

a) The Depot Manager shall counsel all the Drivers operating BS III/BS IV vehicles whose performance is less than the route/type-wise target. The counseling shall be interactive and proactive.

b) Monitor the performance of the counseled Drivers on daily basis during the fortnight.

c) The Dy.CME shall also counsel at least 10 lowest kmpl drivers of the Depot who operate BS III/BS IV vehicles during the fortnight.

3.6. CONDUCTING DRIVER HAPPINESS WEEK

a) During the first two days (on 16th and 17th October, 2019) of the campaign, DM along with the Garage In-charge must be available at HSD Oil bunk at the time of incoming of services and talk to all the incoming drivers and invite their feed back / complaints on the vehicle.

b) All the RGs/Complaints so recorded must be attended within next one week and the same shall be informed to the concerned drivers through notice board.

4.0. REGIONAL MAINTENANCE AUDIT TEAMS:

DyCMEs shall give program to Regional Maintenance Audit Teams formed at the Regional levels to cover all the depots once again during the 'Fuel Saving Campaign Fortnight'. They shall randomly cross check the attention carried out at depots level on the vehicles for improving the HSD KMPL and educate them by demonstrating the correct practices on the vehicles.

5.0. DyCMEs shall visit each depot in his jurisdiction at least once during this special drive and verify the steps taken for improvement of kmpl and submit the feedback on the following items:

a) Oil and Filter changes due

b) DOC/POC cleaning activity on BS-IV buses

c) Moving of buses in 1st gear

d) Checking of BS IV buses with Bluetooth device to remove error codes during Schedule III/IV

e) Availability of special tools like 4 mkg torque wrench, clutch setting jig, back leak tester, injector puller, injector tester, thermostat checking equipment, air suspension bellow height measuring template etc

f) Air leak census and attention

g) Lub oil leakage attention

h) Hand brake working condition

6.0. The Regional Managers are advised to bestow their personal attention in making the 'Fuel saving campaign Fortnight' a success in their regions and visit the depots for ensuring the implementation of the instructions with true spirit.

7.0. The Regional Managers are advised to conduct an exclusive meeting with the Dy.CMEs, Depot Managers, Maintenance incharges, PJ Driving Instructors during the Fortnight to review activities taken up at the depots.

8.0. The Executive Directors of the Zones are requested to ensure effective implementation of the Fortnight and issue necessary instructions to the Zonal Stores and Workshops to plan for adequate supply of spares, tools, Units and other materials to meet the demand from the Depots.

9.0. The Regional Managers are advised to send the detailed compliance report on the observance of 'Fuel saving campaign on BS III/BS IV vehicles' conducted in their Regions, by 1st December, 2019.

EXECUTIVE DIRECTOR (E)

To

All Regional Managers

Copy to: ED(O), ED (A) & FA & CAO for information

Copy to: All EDs of Zones for necessary action.

Copy to: CME(M), CCOS, & CM(A&F) for information

Copy to: Dy CME(M), Dy.CME(W), COS(C) for information.

Copy to: All Dy.CMEs, WMs, COSs, Dy.CAOs of Zones for necessary action

Copy to: All AMEs(T) for necessary action

Copy to: All Depot Managers for necessary action.

Copy to: OSD to VC & MD for information.

Andhra Pradesh State Road Transport Corporation

No : OP2/581(14)/2019-MED

O/o the VC & MD,
RTC House, VJA-13.
Dt.06.11.2019.

Sub:- Special Drive: Special drive on HSD KMPL and tyre performance improvement - Reg.

Ref:- 1. Circular No. 14/2019-MED, Dt.06.11.2019
2. Circular No. 13/2019-MED, Dt.24.10.2019

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HSD KMPL is showing -ve trend in almost all the regions in the corporation. During the review it is observed that HSD KMPL upto the month of Oct'19 has dropped by 0.10 as compared upto the month of Oct'18.

In this context, a special drive "FUEL SAVING COMPAIGN FORTNIGHT" is planned for implementation at all the depots so as to reverse the -ve trends in HSD KMPL. Accordingly, Circular No. 14/2019-MED, Dt.06.11.2019 (reference 1st cited) is released with instructions to implement the special drive during the period 16th Nov'19 to 30th Nov'19.

Further, the expenditure on tyres is another area where the performance is to be regularly monitored in order to contain the CPK on tyres. Hence a special drive "TYRE CARE FORTNIGHT" is planned for implementing and the guidelines are communicated through Circular No. 13/2019-MED, Dt.24.10.2019 (reference 2nd cited). Since the condition of tyres and tyre maintenance play a vital role in improving the HSD KMPL, decision is taken to implement "TYRE CARE FORTNIGHT", simultaneously with the "FUEL SAVING COMPAIGN FORTNIGHT" i.e., during the period 16th Nov'19 to 30th Nov'19.

In view of the above, all RMs are requested to bestow personnel interest to implement both "FUEL SAVING COMPAIGN FORTNIGHT" and "TYRE CARE FORTNIGHT", simultaneously during the period 16th Nov'19 to 30th Nov'19 at all the depots in the Regions and submit compliance on 01.12.2019.

Further, in-order to monitor the progress and also effectiveness in implementation, Officers and Senior Supervisors from MED, HO, will be visiting the depots in various Regions and the list of Officers/Sr.Supervisors nominated to various Regions is also enclosed herewith.

EXECUTIVE DIRECTOR (E)

To
All Regional Managers
Copy to: ED(O), ED (A) & FA & CAO for information
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Copy to: CME(M), CCOS, & CM(A&F) for information
Copy to: Dy CME(M), Dy.CME(W), COS(C) for information.
Copy to: All Dy.CMEs, WMs, COSs, Dy.CAOs of Zones for necessary action
Copy to: All AMEs(T) for necessary action
Copy to: All Depot Managers for necessary action.
Copy to: OSD to VC & MD for information.

LIST OF OFFICERS/SR. SUPERVISORS NOMINATED

S.No.	Region	Name of the Officer/ Sr. Supervisor	Designaiton	Date of Inspection
1	NEC	SRI L.S. RAO	AE(M)	27th & 28th Nov'19
2	VSP	SRI B. LAKSHMAIAH	AE(M)	29th & 30th Nov'19
3	EG	SRI E. RAMESH KUMAR	AE(M)	27th & 28th Nov'19
4	WG	SRI M.S.K.REDDY	AE(M)	25th & 26th Nov'19
5	KRI	SMT. CH. VIMALA	DY.CME(W)	27th & 28th Nov'19
6	GNT	SRI. G. VIJAYA RATNAM	CME(M)	27th & 28th Nov'19
7	OGL	SRI N. MOSHE	AME(W)	29th & 30th Nov'19
8	NLR	SRI M. MADHU	AME(M)	21st & 22nd Nov'19
9	CTR DIVISION	SRI G. VIJAYA RATNAM	CME(M)	21st & 22nd Nov'19
	TPT DIVISION	SRI. G. NAGESWARA RAO	DY.CME(M)	25th & 26th Nov'19
10	KDP	SRI CH. RAMA KRISHNA	AE(M)	29th & 30th Nov'19
11	KRNL	SRI G. NAGESWARA RAO	DY.CME(M)	29th & 30th Nov'19
12	ATP	SRI M.S.RAMA KRISHNA	AE(M)	25th & 26th Nov'19

6/11/19
CME/M