

Sub: Additional Technical agenda items for HHP BIM to be held on 20th and 21st Nov 2015

Ref- This office letter no dlw.m.36.4g dated 20.10.2015

In addition to the 14 technical agenda items communicated vide letter under reference, 3 more items, as detailed below, may also be added to the technical agenda for zonal feedback and discussions during the meeting :-

1. Failure of Compressors on HHP locomotives

Back Ground :- Complaints received and warranty lodged by Zonal Railways for failure of compressors in HHP locomotives.

As directed by RDSO, 15 G&D and 8 ELGI compressors fitted with modified valves are on trial in service (G&D compressors on locomotives based at BGKT, SGUJ & KZJ and ELGI compressors at BGKT and SGUJ). G&D modified compressors have completed around one year in service while ELGI modified compressors are completing 3 months in service.

Reliability performance analysis based on Warranty data:

ELGI	No. of Failures	Warranty Population	%	Failure Analysis	Status
	54	258	21	Suction and Discharge Valve - 20	Modified ELGI valves on 4 locos each of BGKT and SGUJ (running since July 2015)
				Valve Spring-15	
				Inlet Cooler Assbly-5	
				Piston Seizure-2	
				Compressor Shaft (Key Failure)-1	
				Others-9	

G&D	No. of Failures	Warranty Population	%	Failure Analysis	Status
	23	412	5.6	Suction and Discharge Valve - 6	Modified G&D valves on 5 locos each of BGKT, SGUJ & KZJ (One year completed on 18 th Oct 2015).
				Valve Spring-6	
				Inlet Cooler Assbly-1	
				Piston Seizure-2	
				Compressor Shaft (Key Failure)-2	
				Others-7	

Some railways had reported cases of coupling failure. Coupling assembly procedure has been audited. The specified coupling advance of 0.020 to 0.060 thou (as per EAI - 2127) with 650 ft-lb torque was not being achieved. DLW increased the torque to 950 ft-lb. The

grub screw is being tightened to 20 ft-lb. This has been adopted by DLW from 11/05/2015 onwards.

Feedback on failure of compressor couplings, if any, in HHP locos dispatched by DLW having railroad numbers after WDG4 70122, WDP4D 40238 & WDG4D 70370 may be provided.

Group may like to discuss.

2. Failure of Indigenous Radiators:

Reliability of HHP loco radiators manufactured and supplied by Indigenous sources was discussed during the last BIM held at DLW in the month of Aug'2014. A presentation was made by DLW. Details of process audit (including precautions to be taken during storage, handling, assembly & mounting) was done by DLW and need for compliance to OEM's instructions was presented in the forum. The details of design modifications done were also discussed.

Changes implemented by DLW to avoid undue stress during handling and mounting and reduce structural vibrations affecting the radiator cores has been detailed and circulated vide Design Bulletin nos. DB/02/2014/05 dated 10.09.2014 and DB/02/2014/01 dated 10.02.2014.

Considering above modifications implemented by DLW, Zonal Railways may give feedback on radiator failures on HHP locos commissioned after Oct' 14 onwards.

Reliability performance analysis based on Warranty data:

<u>Make</u>	No. of Failures	Warranty Population	%	Failure Analysis
Banco	23	370	6.2	Tube Leakage -19
				Water Leakage from header Gasket Joint - 4
Lloyd	19	301	6.3	Tube Leakage -17
				Water Leakage from header Gasket Joint -1

Group may like to discuss

3. Failure of Fuel transfer pump

Reliability of fuel pumps on HHP locomotives has been a cause of concern. DLW had investigated failures jointly with OEM (M/s. Paragon/USA) and the findings were circulated vide Design Bulletin No. DB/02/2013/01 dated 26.02.2013. DLW has since then relocated the fuel pump. It has been shifted to a location under the bottom plate of the centre-sill. Improvements expected from relocation were (i) improved suction head and (ii) reduction in Fuel pump temperature by almost 10 degree C. Loco nos. starting from WDG4 12803,

WDP4D 40122 & WDG4D 70301 onwards are having fuel pump mounted under the platform.

Comparative performance (before & after relocation):

(Based on Warranty data)

Period	Loco dispatched by DLW	Warranty failures (reported by Zonal Rlys)	%	Location of Fuel Pump
Sept-2011 to Aug-2013	469	149	32	On Equipment Rack
Sept-2013 to Sept -2015	558	46	8	Relocated under the platform

DLW has recently fitted a higher rating pump on HHP loco no. WDG4D-70426 and procurement of 100 nos. of higher rating fuel pumps is in process.

Group may like to discuss.

Dy CDE/Veh-I