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डीजल रेल इंजन कारखाना
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No.dlw.m.65.262

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DESIGN BULLETIN

1. Design bulletin no.: DB/01/2014/24
2. Subject: Scoring marks on Piston observed during commissioning of new HHP locomotives.
3. Background: Complaints received from Sabarmati Diesel Shed regarding lots of scoring marks on Piston observed during commissioning of four HHP locomotives.
(Ref.: Sr. DME/Dsl/SBI/WR letter no. M.233/161/01/MIC/Eng. (Vol.III) dated 30.09.14)
4. Objective: To study the root cause of the scoring marks on the Piston and take corrective action.
5. Details of study /Investigation:
 1. The loco no. 40182 and 40183 was jointly inspected by DLW, VTA & SBI representative on dated 14.10.2014 at SBI shed. During investigation, scoring marks were observed on the piston surface in loco no. 40182 (Power Assembly No. 10) and loco no. 40183 (Power Assembly No. 1, 7 & 15).
 2. These scoring marks are due the foreign particleless ingress between Piston and Cylinder Liner.
 3. Quality audit for engine assembly, engine testing and loco testing at DLW has been conducted. The observations are as under:
 - i) Improper cleaning of weld spatters/slag of main lube oil passage in crank case.
 - ii) Cleaning of chips in piston cooling pipe.
 - iii) Fine chips generated doing rework during dropage of power assembly.
 - iv) Ingress of foreign particle during assembly.
 - v) The flushing of lube oil is not done in HHP engine at engine test bed/DLW. Since, the flushing process of lube oil is not mentioned in EMD engine test procedure. While, the flushing of lube oil is being done in Alco engine at engine test bed/DLW.

vi) It is observed that the primary air filter was by-passed during running of engine in loco test shop because of door near primary air filter (Cyclonic filter) was not closed. This has caused entering of atmospheric air with heavy dust particles from door to the secondary filter and this causes chocking of secondary air filter.

vii) The ingress dirt/Chips already exist in the system are the main cause of scoring on the piston during operation.

6. **Corrective Action:**
- i) Main junction joint cleaning may be ensured before tacking of lube oil manifold cover during fabrication of air box sub assembly in Block Shop.
 - ii) For removing of the foreign particles from the HHP engine, it is recommended that flushing of lube oil may be implemented after pre-lube and before cranking the HHP engine at Engine test shop/DLW.
 - iii) Engine running in by pass condition of primary air filter (Cyclonic filter) needs to be stopped in loco test shop. Doors near primary air filter (Cyclonic filter) should be closed during running of engine.

7. **Drg / spec / Test plan / QP modified:**

Accordingly Misc-195, the specification of test procedure for HHP engine has been revised.

8. **Implementation:** This has to be implemented by ET with immediate effect in HHP engine.

9. **Circulation:** CME (P), CQAM, Dy. CQAM-I, Dy. CME/Block, Dy. CME/Engine, Dy. CME/Loco, WM/Block, WM/Engine, SSE/HWS, SSE/ ET, SSE/LTS, SSE/Inspection- E1 & E3.



09.12.14

Dy. CDE/Engine