A Program of ASTM International

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ASTM consensus has not been obtained on this information letter. An appropriate ASTM ballot will be issued in order to achieve such consensus.

TO: Mack Mailing List

SUBJECT: Updated VUXO Hardware Correction Factors

On August 26, 2014, via teleconference, the Mack Test Surveillance panel approved correction factors for the 'VUXO' hardware combination. These correction factors are in effect for all tests using 'VUXO' hardware that start on or after August 27, 2014. Accordingly, sections 11.6.2.1, 11.6.3.1, 11.6.4.4, 11.6.5.1, and 11.6.6.1 have been revised and are attached. Table A2.1 has been modified and is attached as well to address future hardware batch identification.

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Attachment
c: ftp://ftp.astmtmc.cmu.edu/docs/diesel/mack/procedure_and_ils/T-12/il14-3.pdf

Distribution: Email

(Revises D7422-14 as amended by IL's 14-1 and 14-2)

11.6.2.1 *Correction Factor for Average Top Ring Mass Loss*—For all tests using the STWN hardware combination that completed on or before May 18, 2011, multiply the average top ring mass loss from 11.6.2 by 0.95 to get the final average top ring mass loss result. For all tests using the STWN hardware combination that completed on or after May 19, 2011 and started before June 5, 2012, multiply the average top ring mass loss from 11.6.2 by 0.92 to get the final average top ring mass loss result. For all tests using the STWN hardware combination that started on or after June 5, 2012, multiply the average top ring mass loss from 11.6.2 by 0.705 to get the final average top ring mass loss result. For all tests using the UUXO hardware combination multiply the average top ring mass loss from 11.6.2 by 0.849 to get the final average top ring mass loss result. For all tests using the VUXO hardware combination that started on or after August 27th 2014, multiply the average top ring mass loss from 11.6.2 by 0.719 to get the final average top ring mass loss result. Report the data on the appropriate form.

11.6.3.1 *Correction Factor for Average Cylinder Liner Wear*—For all tests using Batch R piston ring and cylinder liner hardware, multiply the average cylinder liner wear from 11.6.3 by 0.58 to get the final average cylinder liner wear result. For all tests using the SWTN hardware combination that completed on or before May 18, 2011, multiply the average cylinder liner wear from 11.6.3 by 0.86 to get the final average cylinder liner wear result. For all tests using the STWN hardware combination that completed on or after May 19, 2011 and started before June 5, 2012, multiply the average cylinder liner wear from 11.6.3 by 0.83 to get the final average cylinder liner wear result. For all tests using the STWN hardware combination that started on or after June 5, 2012, multiply the average cylinder liner wear from 11.6.3 by 0.946 to get the final average cylinder liner wear result. For all tests using the UUXO hardware combination multiply the average cylinder liner wear from 11.6.3 by 0.566 to get the final average cylinder liner wear result. For all tests using the VUXO hardware combination that started on or after August 27th 2014, multiply the average cylinder liner wear from 11.6.3 by 0.818 to get the final average cylinder liner wear result. Report the data on the appropriate form.

11.6.4.4 *Correction Factor for ΔLead at EOT* —For all tests using the STWN hardware combination that completed on or before May 18, 2011, determine the final ΔLead at EOT result by applying the correction factor of 0.95 according to the following equation:

$$\Delta Lead_{Final} = \exp[\ (\ln(\Delta Lead) \times 0.95)\ ] \qquad (3)$$

Where:
$\Delta Lead_{Final}$ = final ΔLead at EOT
ΔLead = value calculated per 11.6.4.3, equation (2)

For all tests using the STWN hardware combination that completed on or after May 19, 2011 and started before June 5, 2012, determine the final ΔLead at EOT result by applying the correction factor of 0.92 according to the following equation:

$$\Delta Lead_{Final} = \exp[\ (\ln(\Delta Lead) \times 0.92)\ ] \qquad (4)$$

Where:
$\Delta Lead_{Final}$ = final ΔLead at EOT
ΔLead = value calculated per 11.6.4.3, equation (2)

For all tests using the STWN hardware combination that started on or after June 5, 2012, determine the final ΔLead at EOT result by applying the correction factor of 0.923 according to the following equation:

$$\Delta Lead_{Final} = \exp[\ (\ln(\Delta Lead) \times 0.923)\ ] \qquad (5)$$

Where:
$\Delta Lead_{Final}$ = final ΔLead at EOT
ΔLead = value calculated per 11.6.4.3, equation (2)

For all tests using the UUXO hardware combination determine the final ΔLead at EOT result by applying the correction factor of 0.797 according to the following equation:

$$\Delta Lead_{Final} = \exp[(\ln(\Delta Lead) \times 0.797)] \quad (6)$$

Where:
$\Delta Lead_{Final}$ = final ΔLead at EOT
ΔLead = value calculated per 11.6.4.3, equation (2)

For all tests using the VUXO hardware combination that started on or after August 27th 2014, determine the final ΔLead at EOT result by applying the correction factor of 0.813 according to the following equation:

$$\Delta Lead_{Final} = \exp[(\ln(\Delta Lead) \times 0.813)] \quad (6)$$

Where:
$\Delta Lead_{Final}$ = final ΔLead at EOT
ΔLead = value calculated per 11.6.4.3, equation (2)

Report the data on the appropriate form.

11.6.5.1 *Correction Factor for ΔLead (250 to 300) h* —For all tests using the STWN hardware combination that completed on or before May 18, 2011, determine the final ΔLead (250 to 300) h result by applying the correction factor of 1.03 according to the following equation:

$$\Delta Lead\ (250\text{-}300)_{Final} = \exp[(\ln(\Delta Lead\ 250\text{-}300) \times 1.03)] \quad (7)$$

Where:
$\Delta Lead\ (250\text{-}300)_{Final}$ = final ΔLead (250 to 300) h
ΔLead (250-300) = value calculated per 11.6.5

For all tests using the STWN hardware combination that completed on or after May 19, 2011 and started before June 5, 2012, determine the final ΔLead (250 to 300) h result by applying the correction factor of 0.93 according to the following equation:

$$\Delta Lead\ (250\text{-}300)_{Final} = \exp[(\ln(\Delta Lead\ 250\text{-}300) \times 0.93)] \quad (8)$$

Where:
$\Delta Lead\ (250\text{-}300)_{Final}$ = final ΔLead (250 to 300) h
ΔLead (250-300) = value calculated per 11.6.5

For all tests using the STWN hardware combination that started on or after June 5, 2012, determine the final ΔLead (250 to 300) h result by applying the correction factor of 0.956 according to the following equation:

$$\Delta Lead\ (250\text{-}300)_{Final} = \exp[(\ln(\Delta Lead\ 250\text{-}300) \times 0.956)] \quad (9)$$

Where:
$\Delta Lead\ (250\text{-}300)_{Final}$ = final ΔLead (250 to 300) h
ΔLead (250-300) = value calculated per 11.6.5

For all tests using the UUXO hardware combination determine the final ΔLead (250 to 300) h result by applying the correction factor of 0.700 according to the following equation:

$$\Delta\text{Lead (250-300)}_{\text{Final}} = \exp[\ (\ln(\Delta\text{Lead 250-300}) \times 0.700)\ ] \qquad (10)$$

Where:
$\Delta\text{Lead (250-300)}_{\text{Final}}$ = final ΔLead (250 to 300) h
ΔLead (250-300) = value calculated per 11.6.5

For all tests using the VUXO hardware combination that started on or after August 27th 2014, determine the final ΔLead (250 to 300) h result by applying the correction factor of 0.710 according to the following equation:

$$\Delta\text{Lead (250-300)}_{\text{Final}} = \exp[\ (\ln(\Delta\text{Lead 250-300}) \times 0.710)\ ] \qquad (10)$$

Where:
$\Delta\text{Lead (250-300)}_{\text{Final}}$ = final ΔLead (250 to 300) h
ΔLead (250-300) = value calculated per 11.6.5

Report the data on the appropriate form.

11.6.6.1 *Correction Factor for Oil Consumption*—For all tests using the STWN hardware combination that completed on or before May 18, 2011, determine the final oil consumption result by applying the correction factor of 0.96 according to the following equation:

$$OC = \exp[\ (\ln(OC_{100\text{-}300}) \times 0.96)\ ] \qquad (11)$$

Where:
OC = final oil consumption
$OC_{100\text{-}300}$ = average oil consumption from 11.6.6

For all tests using the STWN hardware combination that completed on or after May 19, 2011 and started before June 5, 2012, determine the final oil consumption result by applying the correction factor of 0.95 according to the following equation:

$$OC = \exp[\ (\ln(OC_{100\text{-}300}) \times 0.95)\ ] \qquad (12)$$

Where:
OC = final oil consumption
$OC_{100\text{-}300}$ = average oil consumption from 11.6.6

Report the data on the appropriate form.

For all tests using the STWN hardware combination that started on or after June 5, 2012, determine the final oil consumption result by applying the correction factor of 0.961 according to the following equation:

$$OC = \exp[\ (\ln(OC_{100\text{-}300}) \times 0.961)\ ] \qquad (13)$$

Where:
OC = final oil consumption
$OC_{100\text{-}300}$ = average oil consumption from 11.6.6

Report the data on the appropriate form.

For all tests using the UUXO hardware combination determine the final oil consumption result by applying the correction factor of 0.916 according to the following equation:

$$OC = \exp[\ (\ln(OC_{100\text{-}300}) \times 0.916)\ ] \qquad (14)$$

Where:
OC = final oil consumption
$OC_{100\text{-}300}$ = average oil consumption from 11.6.6

For all tests using the VUXO hardware combination that started on or after August 27th 2014, determine the final oil consumption result by applying the correction factor of 0.913 according to the following equation:

$$OC = \exp[\ (\ln(OC_{100\text{-}300}) \times 0.913)\ ] \qquad (14)$$

Where:
OC = final oil consumption
$OC_{100\text{-}300}$ = average oil consumption from 11.6.6

Report the data on the appropriate form.

TABLE A2.1 New Parts for Each Rebuild

Part Name	Mack Part Number	Quantity
1. Cylinder liners [A, B]	509GC471	6
2. Piston Assembly [A, B]		
Piston Crown	240GC5125M	6
Piston Skirt	240GC5119M	6
3. Piston Ring Set [A, B]		
#1 Compression ring	349GC3107	6
#2 Compression ring	349GC3108	6
Oil ring	350GC343	6
4. Overhaul gasket sets	57GC2176	2
	57GC2178A	1
	57GC2179	1
5. Spin-on filters	485GB3236	2
Centrifugal filter cartridge	239GB244B (57GC2134A Kit)	1
6. Engine coolant conditioner	25MF435B	1
7. Primary fuel filter	483GB470AM	1
8. Secondary fuel filter	483GB471M	1
9. Valve guides	714GB3111	24
10. Valve stem seals	446GC332	24
11. Inlet insert	13GC316	12
12. Exhaust insert	13GC317	12
13. Valve stem key	54GC25	48
14. Inlet Valve	690GC410	12
15. Exhaust Valve	688GC344	12
16. Connecting rod bearings [B]	M1062GBT100	6
17. Main Bearings [B]	M1057GCT100	7
18. Thrust Washers	714GC41	2
	714GC42	2

[A] A P/N 57GC3137 cylinder rebuild kit contains items 1, 2, and 3.

[B] Batched hardware. Each batch given alpha character identifier and hardware kit identification follows the format “ABCDE” where:

1) A=Liner Batch ID
2) B=Ring Batch ID
3) C=Connecting Rod Bearing Batch ID
4) D=Main Bearing Batch ID
5) E=Piston Crown Batch ID (**Note:** Piston Crowns were not originally batched so early hardware batches did not include this character ID. Subsequent batched hardware will include an ID for piston crowns starting with an ID of “A”.)