Message

From: Lit-Mian Chan [lchan@ramboll.com]
Sent: 8/24/2017 3:53:14 PM
To: LaCroix, John [lacroix.john@epa.gov]
CC: Swain, David [swain.david@epa.gov]
Subject: RE: Mahindra - JMNCX2.52DM1

Hi John,

Thanks again for the questions, and your prompt review. I look forward to the approval of the cert app., or addressing any further questions or comments you and David might have. Thanks.

Best regards,
Lit

Lit-Mian Chan | Principal
RAMBOLL ENVIRON
773 San Marin Drive, Suite 2115 | Novato, CA 94998
T: +1 415 899 0751 | F: +1 415 899 0707 | M: +1 916 337 1479
LChan@ramboll.com
www.ramboll-environ.com
Note: I will be out of the office from Sept 25 to Oct 13, 2017 with limited email and vmail accessibility.

From: LaCroix, John [mailto:lacroix.john@epa.gov]
Sent: Wednesday, August 23, 2017 9:33 AM
To: Lit-Mian Chan
Cc: Swain, David
Subject: RE: Mahindra - JMNCX2.52DM1

Thanks for the prompt reply Lit. I'll fun this by D. Swain also since he's the one who has to approve it. I'll include this explanation in my audit. Thanks.

John LaCroix
Senior Environmental Employment (SEE)
Cooperative with the Compliance Division
USEPA
734-214-4463

From: Lit-Mian Chan [mailto:lchan@ramboll.com]
Sent: Wednesday, August 23, 2017 10:52 AM
To: LaCroix, John <lacroix.john@epa.gov>
Subject: RE: Mahindra - JMNCX2.52DM1

Hi John,

Sorry for the confusion, I am the EPA certification representative for the MNTAC in this certification application, and they are the owner of the certification application. I understand that you only deal with me on this cert app.

As for your questions on the common rail fuel system, cooled variable EGR and DOC, this engine family has a diesel engine and these terms are related to its diesel engine. The common rail fuel system is a high pressure direct fuel injection system, where all of the fuel injectors share a common high pressure fuel storage chamber. As for the EGR system, modern diesel engines cool its EGR via a heat exchanger to allow the introduction of a greater amount of EGR into the engine, and the amount of EGR is controlled by engine control unit depending on the NOx reduction needs (i.e. cooled variable EGR). You are correct that DOC stands for diesel oxidation catalyst, which is oxidation catalyst designed for diesel engines.

Please let me know if you have any further questions. Thanks.

Best regards,
Lit

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ENVIRON
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T: +1 415 899 0751 | F: +1 415 899 0707 | M: +1 916 337 1479
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From: LaCroix, John [mailto:lacroix.john@epa.gov]
Sent: Wednesday, August 23, 2017 4:10 AM
To: Lit-Mian Chan
Subject: Mahindra - JMNCX2.52DM1

Lit,
Need clarification. Forgive my ignorance but in the application on CSI.4 the fuel system is referred to as "Common Rail System". Please explain what this is. I'm Used to either carburetor or fuel injection of some type. In the same section you refer to the EGR as "cooled variable" EGR. I have not heard this term before either so, I guess I need you to educate me. To clarify something else, The cover sheet of the application it shows MNATC as the applicant and then your company as "Assisted by". Just so you know, I will not deal with two different entities on the same application. If you are the certification representative authorized to interact with EPA then I will deal with you, but not either of the two individuals from MNATC. On the VECI label for the Exhaust Emission Control System you show DOC which I'm sure identifies the oxidation catalyst but, again, to educate me, what does the "D" stand for? Diesel? I will need Dave Swain's feedback on this application before I can finish my review.

John LaCroix
Senior Environmental Employment (SEE)
Cooperative with the Compliance Division
USEPA
734-214-4463

Message

From: MARTINS HENRIQUE [MARTINS.HENRIQUE@mahindra.com]
Sent: 3/31/2017 8:54:44 PM
To: Swain, David [swain.david@epa.gov]
CC: Jackson, Cleophas [jackson.cleophas@epa.gov]; LaCroix, John [lacroix.john@epa.gov]; Lit-Mian Chan [lchan@ramboll.com]; Paul Kerns [PKerns@ramboll.com]; CORNELL TROY [CORNELL.TROY@mahindra.com]
Subject: MNATC Letter of Intent
Attachments: removed.txt; Letter of Intent_Mahindra_March 31 2017_signed.pdf

Dear Mr. Swain,

Please find attached a letter of intent for our ATV certification plan. The LOI has a few questions that we would like to discuss with you.
Please let us know when would be convenient for you to have a call.

We would like to thank you and your team for your guidance and attention to this matter.

Thanks in advance & best regards,

Henrique R. Martins

Certification & Homologation Manager and Global Regulatory Advisor
Mahindra North American Technical Center
1055 W Square Lake Road
Troy, MI 48098
(248) 268-6600

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Mahindra Rise.

Via Email

March 31, 2017

Mr. David Swain
Office of Transportation and Air Quality
U.S. Environmental Protection Agency
2000 Traverwood Drive
Ann Arbor, Michigan 48105

SUBJECT: Letter of Intent for Mahindra North American Technical Center, Inc. (EPA Manufacturer ID: MNC) MY2018 Certification Plan

Mahindra North American Technical Center, Inc. (MNATC) is a new vehicle design and manufacturer in the US, including off-road, all-terrain and recreational vehicles. MNATC intends to initially certify one (1) MY2018 engine family of an off-road, Side-by-side, All-Terrain Vehicle (ATV) based on a representative Emission Data Vehicle (EDV) that has the same powertrain and transmission systems and emission control systems or parts as the production vehicles.

MNATC is in the development design stage with initial preliminary specifications of the EDV that will meet the emission standards and certification requirements of 40 CFR 1051 criteria for an off-road, recreational vehicle. The proposed EDV's engine and vehicle preliminary specifications, along with the production vehicles of the engine family are included with this letter. The emission related systems and components of this engine family will be provided after final vehicle EDV has been set. The engine and emission related systems or components for this engine family will be production intent utilizing a unique variant of a diesel engine and emission components that are manufactured by or sourced through the parent company in India and the final assembly of the vehicle will be completed in the United States. The EDV will be equipped with a diesel engine and a metal fuel tank design that meets the evaporative and permeation emissions compliance requirements for both EPA and CARB.

The Mahindra side-by-side recreational ATV was uniquely built for off-road use only. The ATV has a unique combination of powertrain and body components and sub-systems, not marketed or sold, anywhere else in the world. Our vehicle will come with warning labels to inform consumers that this vehicle is for off-road use only and not to be used at any time for on-road use. In addition, the vehicle's Electronic Control Unit (ECU) will be permanently governed to limit the speed of the vehicle to less than 45 mph.

The preliminary commercial model name and vehicle photos for the engine family are shown in Figure 1. The engine and vehicle specifications of the engine family are shown in Table 1. The company certification and authorized representatives, and original OEM engine and parts manufacturer are provided in Table 2.The certification and production schedule estimates are provided in Table 3.

Mahindra Rise.

MNATC's responses to the EPA certification and compliance initial questionnaire are shown in Appendix A.

Figure 1: Commercial model name and vehicle photo

Ex. 4 CBI

Brand logo: Mahindra North American Technical Center, Inc. (MNATC)

Brand Name: Mahindra

Mahindra Rise.

Table 1: Preliminary Engine and Vehicle Specifications.

Mahindra	Vehicle Description
Preliminary Specifications	
Vehicle Category	Ex. 4 CBI
OEM Model Name	
Seating capacity	
Vehicle Front/Rear Maximum Payload in Lbs.	
Suspension travel Front / Rear	
Tilt Bed	
Mechanical Power Take Off (PTO) or permanent hydraulic accessory operating system	
Engine Type	
Displacement	
Bore & Stroke (mm)	
Rated Power @ rpm	
Rated Torque @ rpm	
Compression Ratio	
Basic Ignition Timing	
EDV N/V	
Number of Cylinders Valves per Cylinder	
Cylinder Arrangement	
Vehicle Maximum Top Speed	
Loaded Vehicle Mass (Lbs.)	
Transmission Type / Number of Gears	
Type of Fuel System	
Primary Operating Fuel Type	
Idle Speed (rpm)	
Vehicle Wheelbase (mm)	
Method of Air Respiration	
Exhaust Emission Control System	
Engine Cooling Media	

Mahindra Rise.

Table 2: Company certification manager, authorized certification representatives, and OEM manufacturer contact information.

Company Name	Contact Information
Mahindra North American Technical Center	Henrique Martins Certification & Homologation Manager 1055 W. Square Lake Road Troy MI 48098-2523, USA Phone: 248-765-6600 Email: MARTINS.HENRIQUE@mahindra.com
Mahindra North American Technical Center	Troy Cornell Engineering Manager 1055 W. Square Lake Road Troy MI 48098-2523, USA Phone: 248-765-6600 Email: CORNELL.TROY@mahindra.com
Mahindra North American Technical Center	Frederick Laws CFO, CAO for EPA 1055 W. Square Lake Road Troy MI 48098-2523, USA Phone: 248-765-6600 Email: LAWS.FRED@mahindra.com
Ramboll Environ U.S. Corporation (Consultants)	Lit Chan Principal Ramboll Environ U.S. Corporation 773 San Marin Drive, Suite 2115 Novato, CA 94998 Phone: 415-899-0751 Fax: 415-899-0707 Email: LChan@ramboll.com Paul Kerns Senior Manager Ramboll Environ U.S. Corporation 773 San Marin Drive, Suite 2115 Novato, CA 94998 Phone: 415-899-0731 Fax: 415-899-0707 Email: PKerns@ramboll.com

Mahindra Rise.

Table 3: Preliminary Certification and Production Schedule.

Mahindra Vehicle Testing and Production Schedule	
Vehicle Phases	Estimated Start Date
Initial R & D Engine and Chassis-Based Emission Testing	Completed
Vehicle Field Testing	In Process
Emission Durability Vehicle Test Ready	Ready for Testing
EPA/CARB Certification Emission Testing	April - May 2017
Final Production Start	July 2017

As a new manufacturer of off-road recreation vehicles, we would like to discuss with you the following:

- Provide a brief overview of our activities in Troy, Michigan;
- Discuss our development, certification and production program for off road recreational vehicle that we plan to introduce in the US market in some detail; and
- Update the EPA on our certification and production plans below.

MNATC is preparing the following test plan to be used to prepare the Engine Family Application for Certification for this ATV.

Vehicle Description/Details

- Ex. 4 CBI
-
-

Testing Location

- Ex. 4 CBI

Testing Details

- Ex. 4 CBI

Mahindra Rise.

Gear	Upshift Speed (MPH)	Comments
1st to 2nd	Ex. 4 CBI	
2nd to 3rd		
3rd to 4th		
4th to 5th		

- Road load settings will be based on EPA's guidance (86-529-98-extrapolated-2014-07-31) table.
- Using the Federal Test Procedure (FTP), the ATV will be exhaust emission tested at the following three points during durability mileage accumulation; 250km, 5000km and 10,000km, to complete a full useful life test mileage accumulation of 10,000km. ATV tests will be conducted with emissions tests with the standard (ATV) FTP-75 based (§1051.501(b), (40 CFR, part 86) cycle.

Scheduled Ex. 4 CBI Durability Mileage Accumulation Cycle

Ex. 4 CBI

Ex. 4 CBI

Mahindra
Rise.

MNATC Certification Test Plan				
Vehicle Type	Testing Method	Data Measurements	Federal Test Procedures	Sales Area
Diesel ATV	Ex. 4 CBI			50 states/49 states
Meet the EPA emission testing offroad standards under 40 CFR 1051				
§1051.107—Exhaust Emission Standards for ATVs (g/km)				
Emission Standards			Maximum Family Emission Limits	
Model Year	HC+NOx	CO	HC+NOx	CO
2007 or later MY	1.5	35	20	

We have a few questions pertaining to the EPA guidance for the final certification emission test plan that we would like to discuss with you as below:

Ex. 4 CBI

Now that we have completed the R&D and field testing, we will begin final preparations for the certification emission testing of the Emission Durability Vehicle (EDV) and then prepare and submit an engine family certificate application thru the EPA CDX/Verify system.

We appreciate your time in providing guidance with this project and we respectfully request to schedule a call to review the issues outlined above.

Mahindra
Rise.

Meanwhile, should you have any question, please contact me at (248) 765-6600 or martins.henrique@mahindra.com.

Respectfully,

Henrique Martins, Certification & Homologation Manager
Mahindra North American Technical Center, Inc.
1055 W. Square Lake Road
Troy MI 48098-2523, USA

CC:
Troy Cornell, Engineering Manager – MNATC
Cle Jackson, EPA
John LaCroix, EPA
Lit Chan - Principal – Ramboll Environ
Paul Kerns, Senior Manager – Ramboll Environ

Mahindra Rise.

Addendum:

1. Ex. 4 CBI

Ex. 4 CBI

Mahindra Rise.

Technical Specification Sheet

Ex. 4 CBI

Message

From: Lit-Mian Chan [lchan@ramboll.com]
Sent: 9/25/2017 4:42:39 PM
To: LaCroix, John [lacroix.john@epa.gov]
CC: Swain, David [swain.david@epa.gov]
Subject: FW: Mahindra - JMNCX2.52DM1

Hi John,

How are you? Can you please reject the JMNCX2.52DM1 so that we can submit the revised certification application? I would appreciate it.

Thanks in advance for your assistance.

Best regards,
Lit

Lit-Mian Chan | Principal
773 San Marin Drive, Suite 2115 | Novato, CA 94998
T: +1 415 899 0751 | F: +1 415 899 0707 | M: +1 916 337 1479
LChan@ramboll.com
www.ramboll-environ.com
Note: I will be out of the office from Sept 25 to Oct 13, 2017 with limited email and vmail accessibility.

From: Lit-Mian Chan
Sent: Friday, September 22, 2017 7:44 AM
To: Swain, David <swain.david@epa.gov>
Cc: LaCroix, John <lacroix.john@epa.gov>; Chen.Emily@epa.gov; MARTINS HENRIQUE (MARTINS.HENRIQUE@mahindra.com) <MARTINS.HENRIQUE@mahindra.com>; HAAS RICHARD <HAAS.RICHARD@mahindra.com>; CORNELL TROY <CORNELL.TROY@mahindra.com>; DAVIS JEFF <DAVIS.JEFF@mahindra.com>; HORTON JOHN <HORTON.JOHN@mahindra.com>; Paul Douglas Kerns <pkerns@ramboll.com>
Subject: RE: Mahindra - JMNCX2.52DM1

Hi David,

Thanks for your time for our call just now. I will work with MNATC to update the certification application to include the compliance statement supplemental letter, and revised test report, and resubmit the revised cert app as a correction to the VERIFY. We will cancel the pending request for certificate, and make a new request for certificate as well. Thanks.

Best regards,
Lit

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LChan@ramboll.com
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Note: I will be out of the office from Sept 25 to Oct 13, 2017 with limited email and vmail accessibility.

From: MARTINS HENRIQUE [mailto:MARTINS.HENRIQUE@mahindra.com]
Sent: Saturday, September 16, 2017 8:30 AM
To: Swain, David <swain.david@epa.gov>
Cc: LaCroix, John <lacroix.john@epa.gov>; Chen.Emily@epa.gov; HAAS RICHARD <HAAS.RICHARD@mahindra.com>; CORNELL TROY <CORNELL.TROY@mahindra.com>; DAVIS JEFF <DAVIS.JEFF@mahindra.com>; HORTON JOHN <HORTON.JOHN@mahindra.com>; Lit-Mian Chan <lchan@ramboll.com>; Paul Douglas Kerns <PKerns@ramboll.com>
Subject: RE: Mahindra - JMNCX2.52DM1

Dear David Swain,

This note is to confirm that I have uploaded the supplemental letter and the Certification Application to the Verify System

Should you need further information, please do not hesitate to contact us.

Thanks and Kind regards,

Henrique R. Martins

Sr Manager
Technical and Regulatory Affairs
Certification, Homologation, and Compliance
Mahindra Automotive North American Technical Center
1055 W Square Lake Road
Troy, MI 48098
(248) 268-6600

From: MARTINS HENRIQUE
Sent: Thursday, September 14, 2017 6:02 PM
To: 'Swain, David' <swain.david@epa.gov>
Cc: LaCroix, John <lacroix.john@epa.gov>; 'Chen.Emily@epa.gov' <Chen.Emily@epa.gov>; HAAS RICHARD <HAAS.RICHARD@mahindra.com>; CORNELL TROY <CORNELL.TROY@mahindra.com>; DAVIS JEFF <DAVIS.JEFF@mahindra.com>; HORTON JOHN <HORTON.JOHN@mahindra.com>; 'Lit-Mian Chan' <lchan@ramboll.com>; Paul Douglas Kerns <PKerns@ramboll.com>
Subject: RE: Mahindra - JMNCX2.52DM1

Dear David Swain,

Please find attached the requested supplemental letter including the description of the Ex. 4 CBI unique features.

Also, we have been in touch Ex. 4 CBI who updated the testing report to address the errors. I will upload the supplemental letter and the corrected testing report to the Verify system.

Ex. 4 CBI

Ex. 4 CBI

Ex. 4 CBI

Should you need further information, please do not hesitate to contact us.

Thanks and Kind regards,

Henrique R. Martins

Sr Manager
Technical and Regulatory Affairs
Certification, Homologation, and Compliance
Mahindra Automotive North American Technical Center
1055 W Square Lake Road
Troy, MI 48098
(248) 268-6600

Begin forwarded message:

From: Lit-Mian Chan <lchan@ramboll.com>
Date: September 6, 2017 at 5:39:59 PM PDT
To: "Swain, David" <swain.david@epa.gov>

Cc: "LaCroix, John" <lacroix.john@epa.gov>, "Chen, Emily" <Chen.Emily@epa.gov>
Subject: Re: Mahindra - JMNCX2.52DM1

Hi David,

Ex. 4 CBI

Best regards,
Lit

On Sep 6, 2017, at 5:05 PM, Swain, David <swain.david@epa.gov> wrote:

> Hi Lit,
> If this is a non-road vehicle with a non-road engine, a statement like this is needed on the manufacturer letterhead to speed up the certification process:
> The engine in this vehicle is a non-road engine as defined by CAA §216(2)(10).
> This vehicle is a non-road vehicle as defined by CAA §216(2)(11).
>
> Please also provide a description of the unique features this vehicle has that make this a non-road vehicle.

Ex. 4 CBI

Ex. 4 CBI

> Thanks,
> -Dave

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Message

From: Lit-Mian Chan [lchan@ramboll.com]
Sent: 4/18/2017 6:35:00 PM
To: Swain, David [swain.david@epa.gov]
CC: MARTINS HENRIQUE (MARTINS.HENRIQUE@mahindra.com) [MARTINS.HENRIQUE@mahindra.com]
Subject: RE: Mahindra's Questions

Thanks again for your time, Dave! Appreciated it. Lit

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LChan@ramboll.com
www.ramboll-environ.com

From: Swain, David [mailto:swain.david@epa.gov]
Sent: Tuesday, April 18, 2017 10:37 AM
To: Lit-Mian Chan
Cc: MARTINS HENRIQUE (MARTINS.HENRIQUE@mahindra.com)
Subject: RE: Mahindra's Questions

Example of base engine map

From: Lit-Mian Chan [mailto:lchan@ramboll.com]
Sent: Tuesday, April 18, 2017 1:14 PM
To: Swain, David <swain.david@epa.gov>
Cc: MARTINS HENRIQUE (MARTINS.HENRIQUE@mahindra.com) <MARTINS.HENRIQUE@mahindra.com>
Subject: Mahindra's Questions

1. Modified FTP-75 Cycle – Request EPA approval for ATV cycle (§1051.501(b) & paragraph (b) of appendix I to 40 CFR part 86);
2. Approval of using 11 Lap test protocol, durability mileage accumulation at top speed of 45 mph (CFR Title 40 Part 86 Appendix IV-(b);
3. Any special comments regarding AECD information required for diesel ATV;
4. EPA's confirmation of road load mass calculations using EPA's guidance (86-529-98-extrapolated-2014-07-31) table; and
5. Any special comments about ECU consumer tamper-proof methods in regards speed restriction.

Lit-Mian Chan | Principal
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Message

From: Lit-Mian Chan [lchan@ramboll.com]
Sent: 9/22/2017 2:44:13 PM
To: Swain, David [swain.david@epa.gov]
CC: LaCroix, John [lacroix.john@epa.gov]; Chen, Emily [Chen.Emily@epa.gov]; MARTINS HENRIQUE (MARTINS.HENRIQUE@mahindra.com) [MARTINS.HENRIQUE@mahindra.com]; HAAS RICHARD [HAAS.RICHARD@mahindra.com]; CORNELL TROY [CORNELL.TROY@mahindra.com]; DAVIS JEFF [DAVIS.JEFF@mahindra.com]; HORTON JOHN [HORTON.JOHN@mahindra.com]; Paul Douglas Kerns [PKerns@ramboll.com]
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Ex. 4 CBI

Ex. 4 CBI

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Hi David,

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Ex. 4 CBI

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-Dave

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Message

From: Lit-Mian Chan [lchan@ramboll.com]
Sent: 4/18/2017 5:26:07 PM
To: Swain, David [swain.david@epa.gov]
CC: MARTINS HENRIQUE (MARTINS.HENRIQUE@mahindra.com) [MARTINS.HENRIQUE@mahindra.com]
Subject: RE: Mahindra's Questions

https://www.epa.gov/sites/production/files/2016-10/documents/epa-aim-expo-2016-10-14.pdf

Lit-Mian Chan | Principal
RAMBOLL ENVIRON
773 San Marin Drive, Suite 2115 | Novato, CA 94998
T: +1 415 899 0751 | F: +1 415 899 0707 | M: +1 916 337 1479
LChan@ramboll.com
www.ramboll-environ.com

From: Lit-Mian Chan
Sent: Tuesday, April 18, 2017 10:11 AM
To: Swain, David (swain.david@epa.gov)
Cc: MARTINS HENRIQUE (MARTINS.HENRIQUE@mahindra.com)
Subject: Mahindra's Questions

1. Modified FTP-75 Cycle – Request EPA approval for ATV cycle (§1051.501(b) & paragraph (b) of appendix I to 40 CFR part 86);
2. Approval of using 11 Lap test protocol, durability mileage accumulation at top speed of 45 mph (CFR Title 40 Part 86 Appendix IV-(b);
3. Any special comments regarding AECD information required for diesel ATV;
4. EPA's confirmation of road load mass calculations using EPA's guidance (86-529-98-extrapolated-2014-07-31) table; and
5. Any special comments about ECU consumer tamper-proof methods in regards speed restriction.

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LChan@ramboll.com
www.ramboll-environ.com

Message

From: Lit-Mian Chan [lchan@ramboll.com]
Sent: 4/18/2017 5:14:08 PM
To: Swain, David [swain.david@epa.gov]
CC: MARTINS HENRIQUE (MARTINS.HENRIQUE@mahindra.com) [MARTINS.HENRIQUE@mahindra.com]
Subject: Mahindra's Questions

1. Modified FTP-75 Cycle – Request EPA approval for ATV cycle (§1051.501(b) & paragraph (b) of appendix I to 40 CFR part 86);
2. Approval of using 11 Lap test protocol, durability mileage accumulation at top speed of 45 mph (CFR Title 40 Part 86 Appendix IV-(b);
3. Any special comments regarding AECD information required for diesel ATV;
4. EPA's confirmation of road load mass calculations using EPA's guidance (86-529-98-extrapolated-2014-07-31) table; and
5. Any special comments about ECU consumer tamper-proof methods in regards speed restriction.

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LChan@ramboll.com
www.ramboll-environ.com

Message

From: Lit Chan [lchan@ramboll.com]
Sent: 9/23/2016 7:28:51 PM
To: Swain, David [swain.david@epa.gov]
Subject: FW: Follow-Up
Attachments: ATT00001.htm; removed.txt; PRELIMINARY_APPROVAL_1051_210.pdf; EPA_Introducing ATV Ex. 4 CBI 09022016.pdf; ATT00001.htm

fyi

Lit-Mian Chan | Principal
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LChan@ramboll.com
www.ramboll-environ.com

From: Lit Chan
Sent: Wednesday, September 14, 2016 1:23 PM
To: Cleophas Jackson
Cc: MARTINS HENRIQUE
Subject: Fwd: Follow-Up

Hi Cle,

Henrique is concerned that this email might not get to you. Thus, I am forwarding this to you just in case. We apologize for multiple emails if you did receive it. Thanks.

Best regards,
Lit

Begin forwarded message:

> **From:** "MARTINS HENRIQUE" <MARTINS.HENRIQUE@mahindra.com>
> **To:** "Lit Chan" <lchan@ramboll.com>, "Jackson, Cleophas" <jackson.cleophas@epa.gov>
> **Subject: RE: Follow-Up**
>
> Dear Mr. Jackson,
>
> I hope all is well with you.
> I am sorry to hear that my previous email did not go through.
>
> I am resending the message with the attachments, please let me know if you receive it.
>
> Once again sorry for any inconveniences.
>
> Thanks and kind regards,
>
> *Henrique R. Martins*
>
> Regulatory Advisor
> Mahindra North American Technical Center
> 1055 W Square Lake Road
> Troy, MI 48098

From: Lit Chan [mailto:lchan@ramboll.com]
Sent: Wednesday, September 14, 2016 9:58 AM
To: Jackson, Cleophas <jackson.cleophas@epa.gov>
Cc: MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Subject: Re: Follow-Up

Cle,

Thanks for getting back to me. I am sorry to hear that you didn't received the email with attachments. It was sent by Henrique Martin of MNATC, whom is copied here. I will ask Henrique to resend.

Best regards,
Lit

On Sep 14, 2016, at 6:23 AM, Jackson, Cleophas <jackson.cleophas@epa.gov> wrote:

> Lit,
>
> I received your voicemail message, however I don't recall receiving the document that you referenced. If there is a document that we should review, would you please ask your client to resend it. Thank you.
>
> Cleophas Jackson, Director
> Gasoline Engine Compliance Center
> Compliance Division
> United States Environmental Protection Agency
> 2000 Traverwood Drive
> Ann Arbor, MI 48105
> (734) 214-4824
> (734) 214-4053 FAX

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enclosure/(s) or attachment/(s) if any) are those of the individual sender. ----------
---

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Dear Mr. Jackson,

First of all, thank you very much for the time you and your team spent with us in our introductory meeting of the 29th of August.

As per your discussion with our consultant Lit Chan (of Ramboll Environ), please find attached a formal preliminary approval request under 40 CFR 1051.210 and a presentation about our company and our concept vehicle.

We look forward to continuing our discussions,

Thanks and kind regards,

Henrique R. Martins

Regulatory Advisor
Mahindra North American Technical Center
1055 W Square Lake Road
Troy, MI 48098

cid:image001.jpg@01
D0BE1D.0DC50890

Mahindra

EPA OTAQ
Mahindra North American Technical Center
Introducing ATV Ex. 4 CBI

September 2, 2016

Mahindra

Mahindra North American Technical Center

- Location

1055 W. Square Lake Road
Troy MI 48098-2523, USA

- American subsidiary of Mahindra & Mahindra LTD.

Global Supplier of Mobility & Agricultural Products

- Affiliated Entities

Mahindra & Mahindra Ltd. (India) – OEM
Mahindra USA – Ag and Tractor Equipment OEM

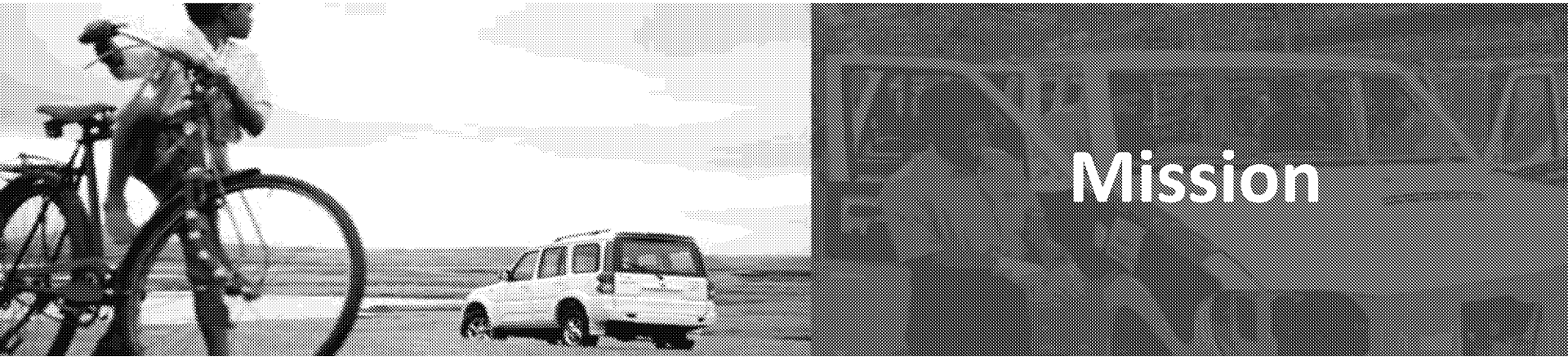
Mahindra RIG

Mahindra North American Technical Center

Mahindra North American Technical Center
Investment to date: *$20M*
Current employment: *110*
Projected 2020 employment: Ex. 4 CBI

Mahindra RIG

Mahindra North American Technical Center



Design, Develop, Prototype and Validate New Vehicles to Support Mahindra's Global Aspirations

Mahindra North American Technical Center

Objectives

Utilize Southeast Michigan's automotive intellect to help advance Mahindra's architecture and platform design capability.

Design, Engineer and Develop/Validate prototypes and engineering capabilities for Mahindra global vehicle platforms

Mahindra

Mahindra North American Technical Center

Full Vehicle Product Development Capability

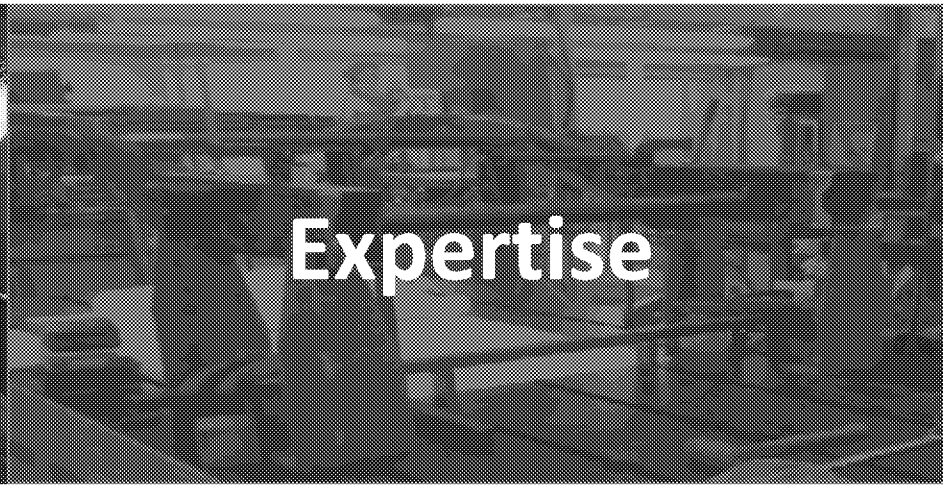
- New Platforms
- New Vehicles
- Technology Development
- New Market Opportunities

Vehicle Prototyping

- Vehicle Level Builds
- Special Builds (Concept Tryouts)
- Part Fabrication
- Rapid Prototyping

Mahindra

Mahindra North American Technical Center



- 110 Engineers and Growing
  - 25 years average experience
  - Recruited from Top Automotive firms Globally
  - MRV based Teams Rotate Thru on Regular Basis
  - Ex. 4 CBI

- Engineering Scope
  - Body Structure Design
  - Interior/Exterior Trim
  - Chassis and Dynamics
  - Closures and Mechanisms
  - Safety Systems Engineering
  - Powertrain Integration

Mahindra Confidential Business Information

Mahindra

Mahindra North American Technical Center

Ex. 4 CBI

Accomplishments

Ex. 4 CBI

Mahindra

Mahindra North American Technical Center

Corporate Social Responsibility

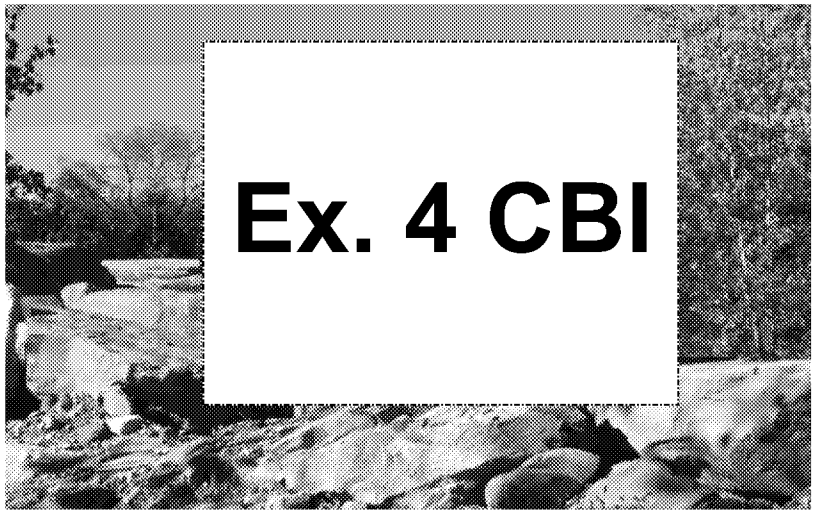
- **Urban Farming in Detroit—**In two years, MNATC has awarded over $175,000 in grants and equipment to a variety of non-profit urban agriculture programs in the City of Detroit. The programs turn abandoned city property into working farms providing food and vocational opportunities in impoverished neighborhoods.

- **Industry Outreach—**Working in partnership with SE Michigan's academic institutions and economic development authorities, MNATC provides training, work experience, and support for aspiring engineers and designers each year in an effort to ensure Michigan remains a leading automotive development center.

- **Operation Finally Home—** Mahindra USA is an instrumental sponsor of a program that provides custom-built, mortgage-free homes for wounded veterans. We also sponsor programs with first-responders, teachers and various non-profit farming programs.

Mahindra

Mahindra North American Technical Center



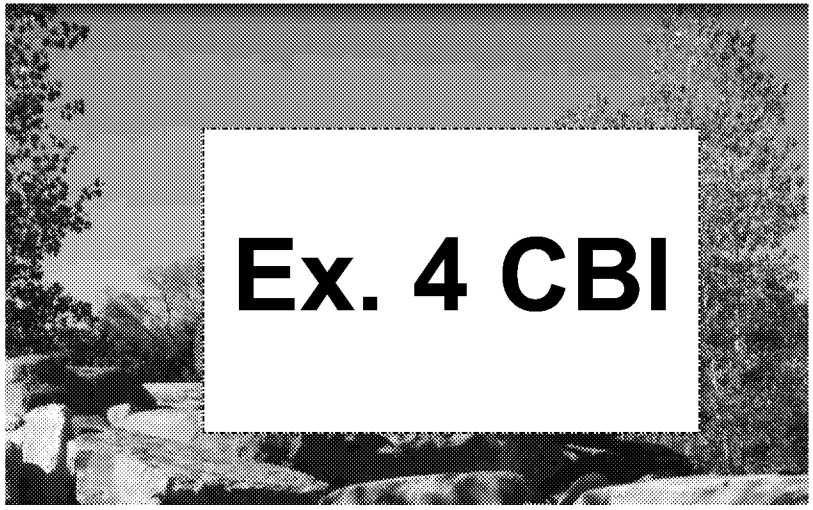
Our Next Challenge: Develop an Off-Road All Terrain Vehicle for the U.S. Market – Ex. 4 CBI

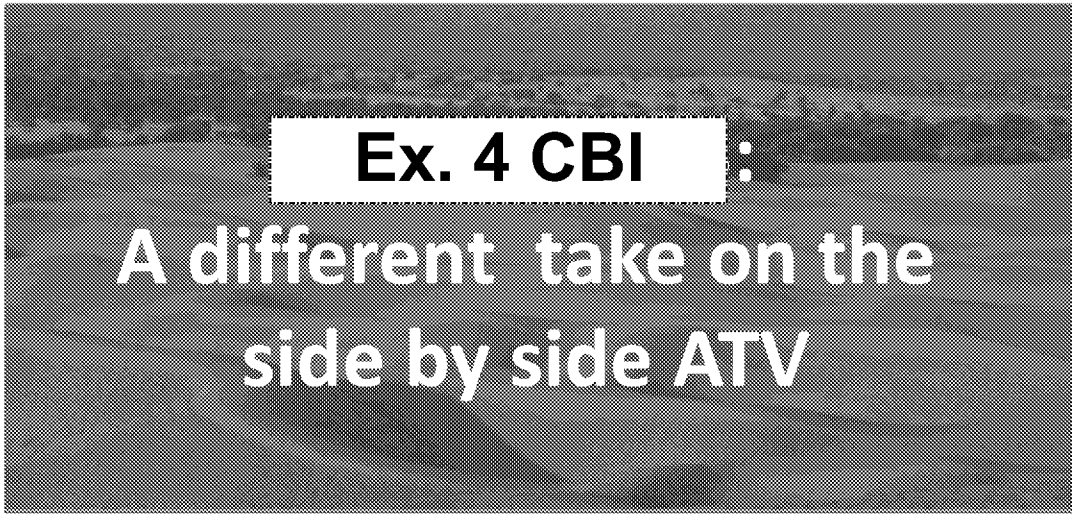
The first Mahindra designed and built Side-by-Side ATV

Ex. 4 CBI

Mahindra

Mahindra North American Technical Center



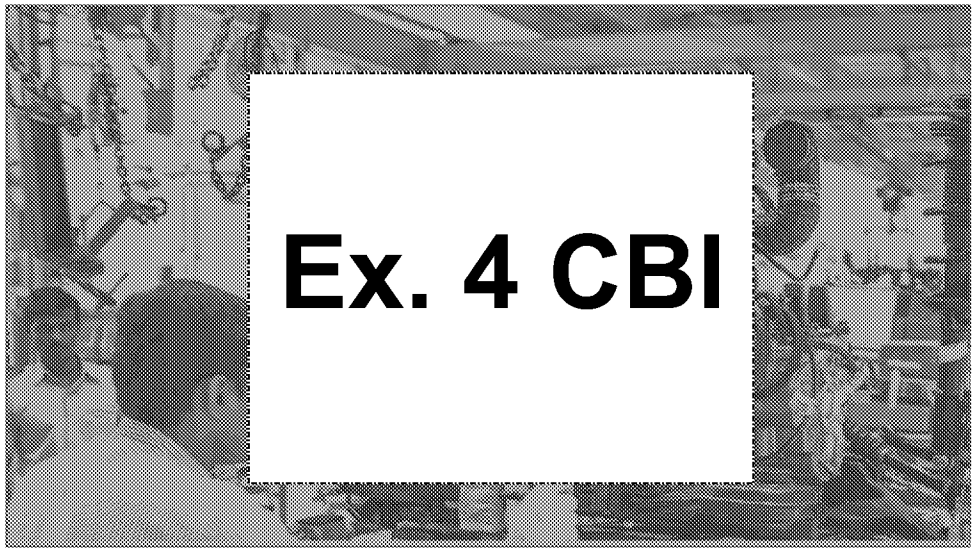


Ex. 4 CBI will be the first Mahindra designed and built ATV sold in the US.

- Heavier duty capability, extremely rugged & fuel efficient
- Multi-based off-road recreation vehicle, applicable to hunting and sport use

Mahindra

Mahindra North American Technical Center



Ex. 4 CBI

- To be assembled in Michigan

Ex. 4 CBI

Mahindra

Mahindra North American Technical Center

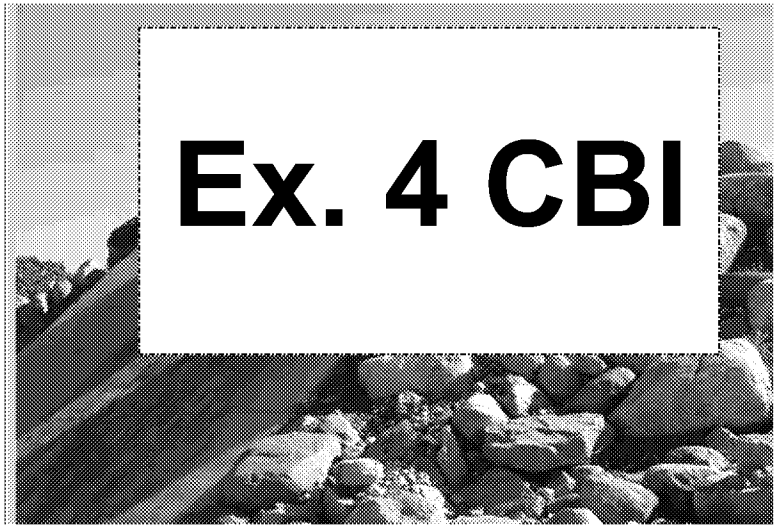
Ex. 4 CBI

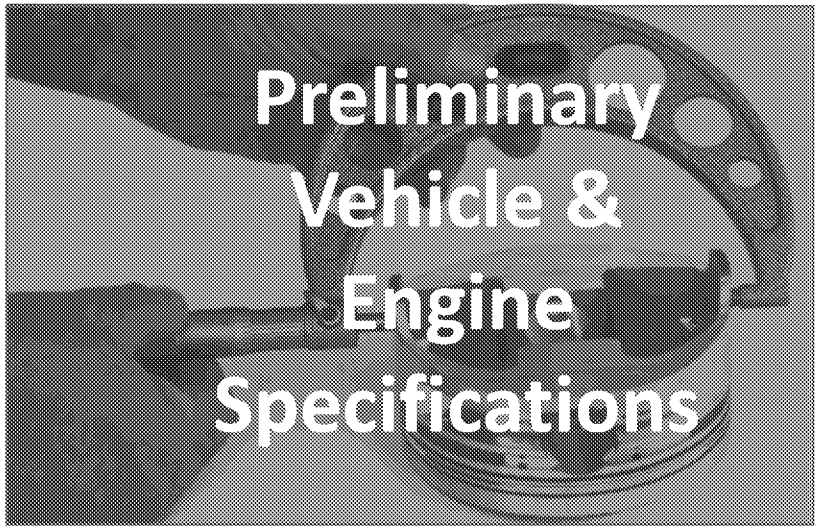
Certification & Compliance Team

- Fred Laws, CFO MNATC Signing Authority (CAO)
- Keith Takasawa, MNATC VP, PD & Compliance
- Troy Cornell, MNATC Project Leader
- Henrique Martins, MNATC Regulatory Advisor
- John Horton, MNATC Senior Product Engineer
- Ex. 4 CBI
- Lit Chan, Principal at Ramboll Environ US Corporation
- Paul Kerns, Senior Manager at Ramboll Environ US Corporation

Mahindra

Mahindra North American Technical Center

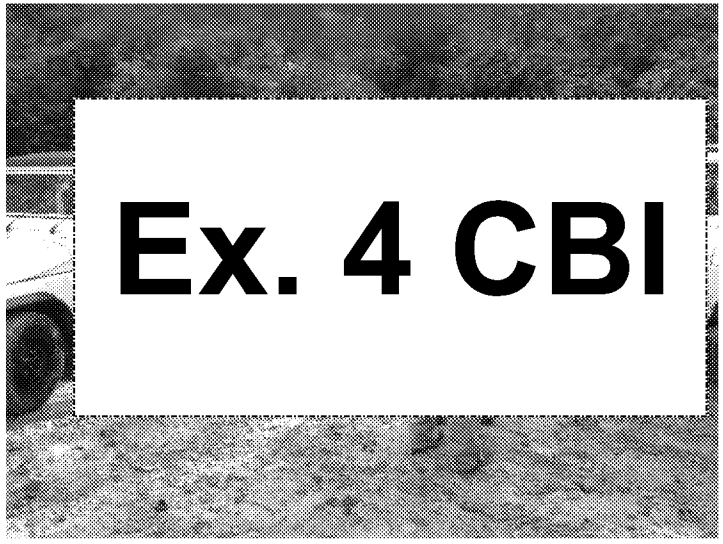




Ex. 4 CBI

Mahindra Rise

Mahindra North American Technical Center



Meets definition of an off-road recreation vehicle per Title 40 §1051.801

Ex. 4 CBI

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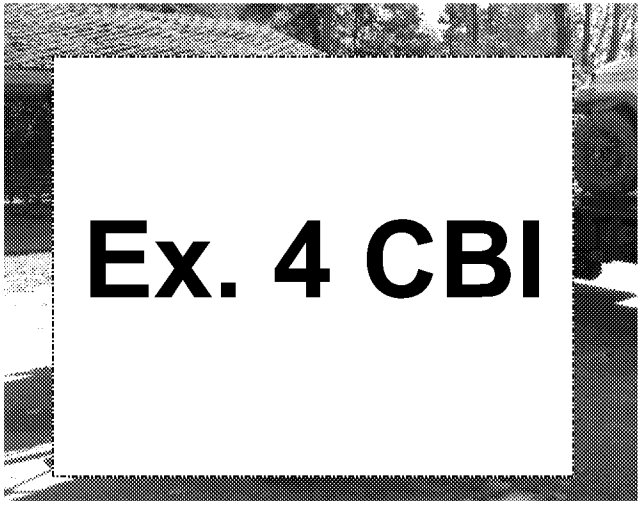
Mahindra North American Technical Center

Ex. 4 CBI

- We will be compliant with Part 1051
  - QA/QC component and vehicle inspections
  - Vehicle Audit Program including Emissions Testing

Mahindra

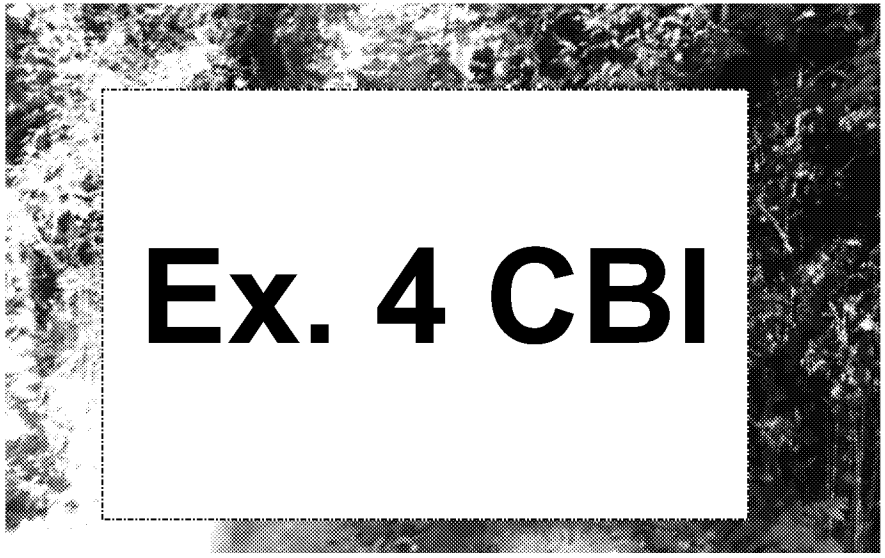
Mahindra North American Technical Center



- MNATC Service and Parts Department will be responsible for tracking, identifying, investigating, evaluating, reporting, and correcting any potential and actual emissions-related defects as requirements.

Mahindra

Mahindra North American Technical Center



- Issues and Topics

Ex. 4 CBI

- Other Items

Mahindra

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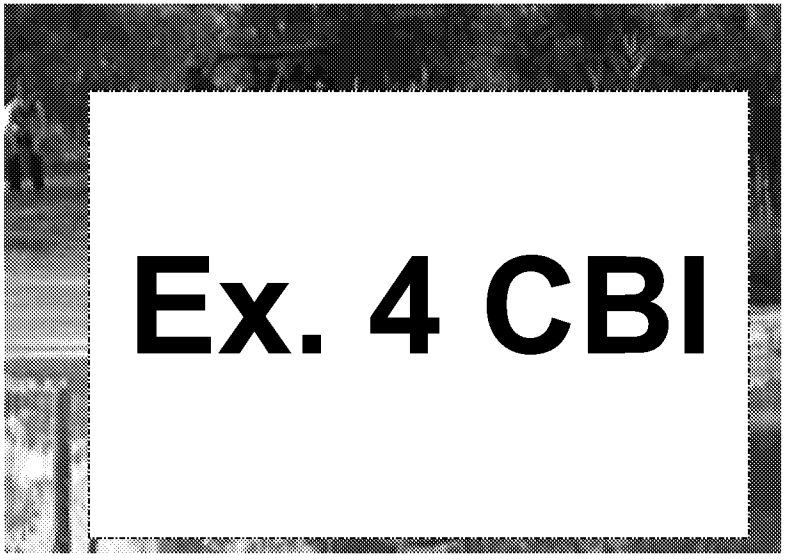

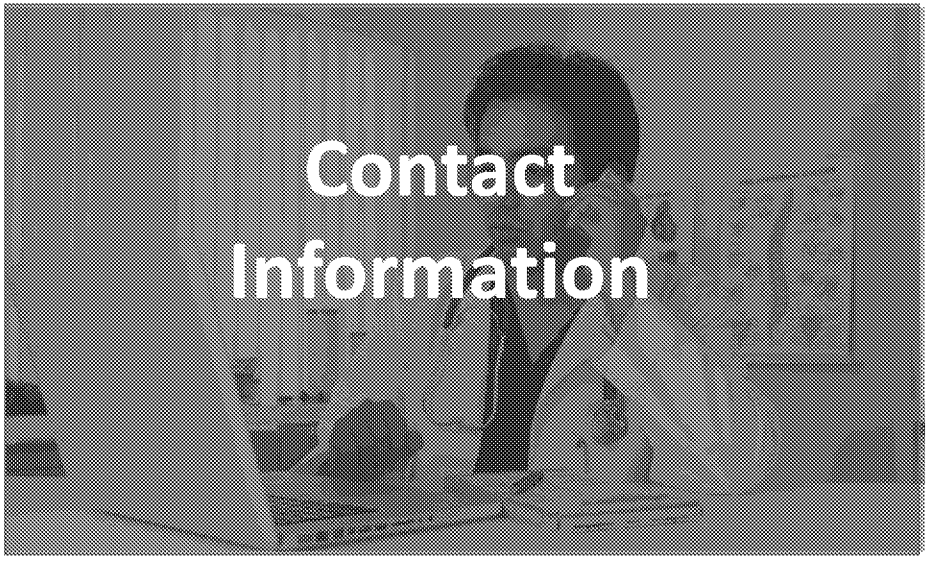

- MNATC Contact Info

ContactInfo

Message

From: Lit Chan [lchan@ramboll.com]
Sent: 8/29/2016 1:25:16 PM
To: Jackson, Cleophas [jackson.cleophas@epa.gov]
CC: Paul Kerns [PKerns@ramboll.com]; Swain, David [swain.david@epa.gov]
Subject: Re: Mahindra meeting attendees for Monday August 29, 2016

Hi Cle, I will forward to you MNATC's Letter of Intent. Thanks. Lit

On Aug 29, 2016, at 8:43 AM, Jackson, Cleophas <jackson.cleophas@epa.gov> wrote:

Do we have the material for the meeting today?

From: Paul Kerns [mailto:PKerns@ramboll.com]
Sent: Thursday, August 25, 2016 5:02 PM
To: Swain, David <swain.david@epa.gov>
Cc: Lit Chan <lchan@ramboll.com>; Jackson, Cleophas <jackson.cleophas@epa.gov>
Subject: Mahindra meeting attendees for Monday August 29, 2016

Dear David,

Shown below is the list of names that will be attending the Mahindra meeting on Monday:

Richard Ansell, Vice President of Sales
Troy Cornell, MNATC Project Leader
Henrique Martins, MNATC Regulatory Advisor
John Horton, MNATC Senior Product Engineer
Ex. 4 CBI
Lit Chan, Principal at Ramboll Environ US Corporation
Paul Kerns, Senior Manager at Ramboll Environ US Corporation

Let us know if you have any questions.

Yours sincerely
Paul Kerns

Senior Manager
Mobile Emissions

D +1 415 899 0731
M +1 586 354 0033
PKerns@ramboll.com

Ramboll Environ
773 San Marin Drive
Suite 2115
Novato, CA 94998
USA
www.ramboll-environ.com

<image001.png>

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Message

From: MARTINS HENRIQUE [MARTINS.HENRIQUE@mahindra.com]
Sent: 9/16/2017 3:29:56 PM
To: Swain, David [swain.david@epa.gov]
CC: LaCroix, John [lacroix.john@epa.gov]; Chen, Emily [Chen.Emily@epa.gov]; HAAS RICHARD [HAAS.RICHARD@mahindra.com]; CORNELL TROY [CORNELL.TROY@mahindra.com]; DAVIS JEFF [DAVIS.JEFF@mahindra.com]; HORTON JOHN [HORTON.JOHN@mahindra.com]; Lit-Mian Chan [lchan@ramboll.com]; Paul Douglas Kerns [PKerns@ramboll.com]
Subject: RE: Mahindra - JMNCX2.52DM1
Attachments: View Message _ Central Data Exchange _ US EPA_SUPPLEMENTAL LETTER.pdf; View Message _ Central Data Exchange _ US EPA_APPLICATION WITH UPDATED TESTING REPORT.pdf

Dear David Swain,

This note is to confirm that I have uploaded the supplemental letter and the Certification Application to the Verify System

Should you need further information, please do not hesitate to contact us.

Thanks and Kind regards,

Henrique R. Martins

Sr Manager
Technical and Regulatory Affairs
Certification, Homologation, and Compliance
Mahindra Automotive North American Technical Center
1055 W Square Lake Road
Troy, MI 48098
(248) 268-6600

From: MARTINS HENRIQUE
Sent: Thursday, September 14, 2017 6:02 PM
To: 'Swain, David' <swain.david@epa.gov>
Cc: LaCroix, John <lacroix.john@epa.gov>; 'Chen.Emily@epa.gov' <Chen.Emily@epa.gov>; HAAS RICHARD <HAAS.RICHARD@mahindra.com>; CORNELL TROY <CORNELL.TROY@mahindra.com>; DAVIS JEFF <DAVIS.JEFF@mahindra.com>; HORTON JOHN <HORTON.JOHN@mahindra.com>; 'Lit-Mian Chan' <lchan@ramboll.com>; Paul Douglas Kerns <PKerns@ramboll.com>
Subject: RE: Mahindra - JMNCX2.52DM1

Dear David Swain,

Please find attached the requested supplemental letter including the description of the Ex. 4 CBI unique features.

Also, we have been in touch with Ex. 4 CBI who updated the testing report to address the errors. I will upload the supplemental letter and the corrected testing report to the Verify system.

Ex. 4 CBI

Should you need further information, please do not hesitate to contact us.

Thanks and Kind regards,

Henrique R. Martins

Sr Manager
Technical and Regulatory Affairs
Certification, Homologation, and Compliance
Mahindra Automotive North American Technical Center
1055 W Square Lake Road
Troy, MI 48098
(248) 268-6600

Mahindra Rise

Begin forwarded message:

From: Lit-Mian Chan <lchan@ramboll.com>
Date: September 6, 2017 at 5:39:59 PM PDT
To: "Swain, David" <swain.david@epa.gov>
Cc: "LaCroix, John" <lacroix.john@epa.gov>, "Chen, Emily" <Chen.Emily@epa.gov>
Subject: Re: Mahindra - JMNCX2.52DM1

Hi David,

Ex. 4 CBI

Best regards,
Lit

On Sep 6, 2017, at 5:05 PM, Swain, David <swain.david@epa.gov> wrote:

Hi Lit,
If this is a non-road vehicle with a non-road engine, a statement like this is needed on the manufacturer letterhead to speed up the certification process:
The engine in this vehicle is a non-road engine as defined by CAA §216(2)(10).
This vehicle is a non-road vehicle as defined by CAA §216(2)(11).

Please also provide a description of the unique features this vehicle has that make this a non-road vehicle.

Ex. 4 CBI

Thanks,
-Dave

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the enclosure/(s) or attachment/(s) if any) are those of the individual sender. ----------
---

Submission accepted for your file upload 18_CBI_JMNCX2.52DM1_INI_rev20170913.pdf

From
Verify Administrator
Date
9/16/2017 11:21:52 AM

Your recent submission for the file upload 18_CBI_JMNCX2.52DM1_INI_rev20170913.pdf has been received by EPA. You will be notified if any additional actions on your part are required

The following document identifier has been assigned to this request:

_234100f4-22b7-43ce-92c1-6abbc43dc4d3

Document Name: 18_CBI_JMNCX2.52DM1_INI_rev20170913.pdf

Transaction Identifier: _234100f4-22b7-43ce-92c1-6abbc43dc4d3

Click here to view the status history.

Thank you for submitting your request to Verify via CDX.

Submission accepted for your file upload Supplemental Application Letter_JMNCX2.

From
Verify Administrator
Date
9/16/2017 11:17:03 AM

Your recent submission for the file upload Supplemental Application Letter_JMNCX2.52DM1_09132017.pdf has been received by EPA. You will be notified if any additional actions on your part are required

The following document identifier has been assigned to this request:

_70d55e13-3b59-4e1a-acfd-8604eb9fcc1f

Document Name: Supplemental Application Letter_JMNCX2.52DM1_09132017.pdf

Transaction Identifier: _70d55e13-3b59-4e1a-acfd-8604eb9fcc1f

Click here to view the status history.

Thank you for submitting your request to Verify via CDX.

Message

From: Lit Chan [lchan@ramboll.com]
Sent: 9/27/2016 7:11:21 PM
To: Swain, David [swain.david@epa.gov]
CC: MARTINS HENRIQUE (MARTINS.HENRIQUE@mahindra.com) [MARTINS.HENRIQUE@mahindra.com]
Subject: FW: Follow-Up

Hi David,

As per my vmail to you just now, I wanted to make sure you had received the email from Henrique of Mahindra as the previous emails he sent to Cle didn't get through the EPA email server.

I know that you are busy finishing work before your trip tomorrow. So, have a wonderful trip, and I can't wait to hear from you on your experience when you get back.

Cheers,
Lit

Lit-Mian Chan | Principal
RAMBOLL ENVIRON
773 San Marin Drive, Suite 2115 | Novato, CA 94998
T: +1 415 899 0762 | F: +1 415 899 0707 | M: +1 916 337 1479
LChan@ramboll.com
www.ramboll-environ.com

From: MARTINS HENRIQUE [mailto:MARTINS.HENRIQUE@mahindra.com]
Sent: Monday, September 26, 2016 11:55 AM
To: swain.david@epa.gov
Cc: Jackson, Cleophas; Lit Chan; Paul Kerns; CORNELL TROY
Subject: RE: Follow-Up

Dear Mr. Swain,

Thank you for the time spent reviewing the presentation and the material sent to Mr. Jackson on September 14, 2016.

Your guidance and recommendations for our ATV program are greatly appreciated, as we will move forward with our certification plans under 40 CFR 1051.

Should you have questions or further comments, please do not hesitate to contact me.

Thanks and kind regards,

Henrique R. Martins

Regulatory Advisor
Mahindra North American Technical Center
1055 W Square Lake Road
Troy, MI 48098

From: Lit Chan [mailto:lchan@ramboll.com]
Sent: Monday, September 26, 2016 2:31 PM

To: MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Subject: FW: Follow-Up

Hi Henrique,

Please see David Swain's response to your email to Cle Jackson regarding formal preliminary approval request under 40 CFR 1051.210 and a presentation about our company and our concept vehicle.

Please feel free to follow up with David or Cle on any questions you might have.

Best regards,
Lit

Lit-Mian Chan | Principal
RAMBOLL ENVIRON
773 San Marin Drive, Suite 2115 | Novato, CA 94998
T: +1 415 899 0762 | F: +1 415 899 0707 | M: +1 916 337 1479
LChan@ramboll.com
www.ramboll-environ.com

From: Swain, David [mailto:swain.david@epa.gov]
Sent: Friday, September 23, 2016 12:47 PM
To: Lit Chan
Cc: Jackson, Cleophas
Subject: RE: Follow-Up

Hi Lit,
Please submit the application for your ATV so that we may evaluate it.
Thanks,
-Dave

From: Lit Chan [mailto:lchan@ramboll.com]
Sent: Friday, September 23, 2016 3:29 PM
To: Swain, David <swain.david@epa.gov>
Subject: FW: Follow-Up

fyi

Lit-Mian Chan | Principal
RAMBOLL ENVIRON
773 San Marin Drive, Suite 2115 | Novato, CA 94998
T: +1 415 899 0762 | F: +1 415 899 0707 | M: +1 916 337 1479
LChan@ramboll.com
www.ramboll-environ.com

From: Lit Chan
Sent: Tuesday, September 20, 2016 12:50 PM
To: 'Jackson, Cleophas'
Subject: RE: Follow-Up

Hi Cle,

I left you a vmail yesterday, wanting to check in with you to see if you have a chance to review the MNATC letter and presentation.

Our client is anxious to hear from you, and would like to meet with you and your team to further discuss their plan and your guidance on their offroad and recreation vehicle product and business development.

They have also asked me to extend their invitation to you and your team to visit their facility. Please kindly get back to us on your thoughts. Thanks.

Best regards,
Lit

Ex. 4 CBI

Lit-Mian Chan | Principal
[redacted] ENVIRON
773 San Marin Drive, Suite 2115 | Novato, CA 94998
T: +1 415 899 0762 | F: +1 415 899 0707 | M: +1 916 337 1479
LChan@ramboll.com
www.ramboll-environ.com

From: Jackson, Cleophas [mailto:jackson.cleophas@epa.gov]
Sent: Wednesday, September 14, 2016 1:55 PM
To: Lit Chan
Cc: MARTINS HENRIQUE
Subject: RE: Follow-Up

Received. Thank you.

From: Lit Chan [mailto:lchan@ramboll.com]
Sent: Wednesday, September 14, 2016 4:23 PM
To: Jackson, Cleophas <jackson.cleophas@epa.gov>
Cc: MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Subject: Fwd: Follow-Up

Hi Cle,

Henrique is concerned that this email might not get to you. Thus, I am forwarding this to you just in case. We apologize for multiple emails if you did receive it. Thanks.

Best regards,
Lit

Begin forwarded message:

> **From:** "MARTINS HENRIQUE" <MARTINS.HENRIQUE@mahindra.com>
> **To:** "Lit Chan" <lchan@ramboll.com>, "Jackson, Cleophas" <jackson.cleophas@epa.gov>
> **Subject: RE: Follow-Up**
>
> Dear Mr. Jackson,

I hope all is well with you.
I am sorry to hear that my previous email did not go through.

I am resending the message with the attachments, please let me know if you receive it.

Once again sorry for any inconveniences.

Thanks and kind regards,

Henrique R. Martins

Regulatory Advisor
Mahindra North American Technical Center
1055 W Square Lake Road
Troy, MI 48098

From: Lit Chan [mailto:lchan@ramboll.com]
Sent: Wednesday, September 14, 2016 9:58 AM
To: Jackson, Cleophas <jackson.cleophas@epa.gov>
Cc: MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Subject: Re: Follow-Up

Cle,

Thanks for getting back to me. I am sorry to hear that you didn't received the email with attachments. It was sent by Henrique Martin of MNATC, whom is copied here. I will ask Henrique to resend.

Best regards,
Lit

On Sep 14, 2016, at 6:23 AM, Jackson, Cleophas <jackson.cleophas@epa.gov> wrote:

> Lit,
>
> I received your voicemail message, however I don't recall receiving the document that you referenced. If there is a document that we should review, would you please ask your client to resend it. Thank you.
>
> Cleophas Jackson, Director
> Gasoline Engine Compliance Center
> Compliance Division
> United States Environmental Protection Agency
> 2000 Traverwood Drive
> Ann Arbor, MI 48105
> (734) 214-4824
> (734) 214-4053 FAX

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Message

From: MARTINS HENRIQUE [MARTINS.HENRIQUE@mahindra.com]
Sent: 9/14/2017 10:02:41 PM
To: Swain, David [swain.david@epa.gov]
CC: LaCroix, John [lacroix.john@epa.gov]; Chen, Emily [Chen.Emily@epa.gov]; HAAS RICHARD [HAAS.RICHARD@mahindra.com]; CORNELL TROY [CORNELL.TROY@mahindra.com]; DAVIS JEFF [DAVIS.JEFF@mahindra.com]; HORTON JOHN [HORTON.JOHN@mahindra.com]; Lit-Mian Chan [lchan@ramboll.com]; Paul Douglas Kerns [PKerns@ramboll.com]
Subject: RE: Mahindra - JMNCX2.52DM1
Attachments: Supplemental Application Letter_JMNCX2.52DM1_rev09132017_final.pdf; RE: EPA Questions/Comments

Dear David Swain,

Please find attached the requested supplemental letter including the description of **Ex. 4 CBI** unique features.

Also, we have been in touch with Ex. 4 CBI who updated the testing report to address the errors. I will upload the supplemental letter and the corrected testing report to the Verify system.

Ex. 4 CBI

Should you need further information, please do not hesitate to contact us.

Thanks and Kind regards,

Henrique R. Martins

Sr Manager
Technical and Regulatory Affairs
Certification, Homologation, and Compliance
Mahindra Automotive North American Technical Center
1055 W Square Lake Road
Troy, MI 48098
(248) 268-6600

Begin forwarded message:

From: Lit-Mian Chan <lchan@ramboll.com>
Date: September 6, 2017 at 5:39:59 PM PDT
To: "Swain, David" <swain.david@epa.gov>
Cc: "LaCroix, John" <lacroix.john@epa.gov>, "Chen, Emily" <Chen.Emily@epa.gov>
Subject: Re: Mahindra - JMNCX2.52DM1

Hi David,

Ex. 4 CBI

Best regards,
Lit

On Sep 6, 2017, at 5:05 PM, Swain, David <swain.david@epa.gov> wrote:

Hi Lit,
If this is a non-road vehicle with a non-road engine, a statement like this is needed on the manufacturer letterhead to speed up the certification process:
The engine in this vehicle is a non-road engine as defined by CAA §216(2)(10).
This vehicle is a non-road vehicle as defined by CAA §216(2)(11).

Please also provide a description of the unique features this vehicle has that make this a non-road vehicle.

Ex. 4 CBI

Ex. 4 CBI

Thanks,
-Dave

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Message

From: Ex. 4 CBI
Sent: 9/11/2017 1:42:30 PM
To: HORTON JOHN [HORTON.JOHN@mahindra.com]
CC: Ex. 4 CBI MARTINS HENRIQUE [MARTINS.HENRIQUE@mahindra.com]
Subject: RE: EPA Questions/Comments
Attachments: CC12978_CO_100 ppm.pdf; CC52649_CO_250 ppm.pdf; CC75119_CO_1000 ppm.pdf; Ex. 4 CBI D1-SULEV
7057_LinCheck_MP_33548013_CO L_1_20170828_1429_passed.pdf; D1-SULEV
7057_LinCheck_MP_33548013_CO L_2_20170828_1453_passed.pdf; Ex. 4 CBI D1-SULEV
7057_LinCheck_MP_33548013_CO L_1_20170721_1049_passed.pdf; D1-SULEV
7057_MidSpanCheck_33548013_CO L_1_20170721_1109_passed.pdf; Zero Air_COA_9-27-16.pdf

Hi John,

Attached are the CO bottle gas data sheets., CO-L Analyzer calibrations prior (7/21/17) to and after (8/28/17) the 10,000 Km test and the Zero Air bottle gas data sheet. The earlies bottle gas expiration date is May 6, 2021.

Within each exhaust emissions report the tab "ZS Results Bag" provides the analyzer calibrations performed twice before the sample is measured and once after the sample is measured. Your allowed up to a 2% variation. In this case the actual variance is typically below 0.5%.

Sincerely,

Ex. 4 CBI

Airgas

Airgas USA, LLC
2009 Bellaire Ave.
Royal Oak, MI 48067-6020
248-399-8020
www.airgas.com

CERTIFICATE OF ANALYSIS
Grade of Product: TRACEABILITY STANDARD

Customer:	Ex. 4 CBI		
Part Number:	X02NI99T15AC1Z7	Reference Number:	32-400162209-1
Cylinder Number:	CC12978	Cylinder Volume:	144.3 CF
Laboratory:	Ex. 4 CBI	Cylinder Pressure:	2015 PSIG
PGVP Number:	NONPGVP	Valve Outlet:	350
		Certification Date:	Mar 06, 2013

Expiration Date: Mar 06, 2021

This cylinder has been analytically certified as directly traceable to NIST with a total analytical uncertainty as stated below with a confidence level of 95%, in accordance with Airgas ISO procedures. There are no significant impurities which affect the use of this calibration mixture. All concentrations are on a volume/volume basis unless otherwise noted.

Do Not Use This Cylinder Below 150 psig, i.e. 1 Mega Pascal

ANALYTICAL RESULTS

Component	Requested Concentration	Actual Concentration	Protocol Method	Total Relative Uncertainty	Assay Dates
CARBON MONOXIDE	90.00 PPM	90.55 PPM	G1	+/- 1% NIST Traceable	
NITROGEN	Balance				

CALIBRATION STANDARDS

Type	Lot ID	Cylinder No	Concentration	Uncertainty	Expiration Date
NTRM	12062222	CC365454	97.56 PPM CARBON MONOXIDE/NITROGEN	+/- 0.6%	May 25, 2016

ANALYTICAL EQUIPMENT

Instrument/Make/Model	Analytical Principle	Last Multipoint Calibration
E/N 54, 100ppmFS CO, Nicolet 6700	Fourier Transform Infrared (FTIR)	Feb 25, 2013

Triad Data Available Upon Request

Notes:

Approved for Release

Airgas
an Air Liquide company

Airgas Great Lakes region
Airgas USA, LLC
1290 Combermere Dr.
Troy, MI 48083
Airgas.com

CERTIFICATE OF ANALYSIS

Grade of Product: TRACEABILITY STANDARD

Customer: Ex. 4 CBI

Part Number: X02NI99T15AC4H5
Cylinder Number: CC52649
Laboratory: Ex. 4 CBI

Reference Number: 32-400936646-1
Cylinder Volume: 144.3 CF
Cylinder Pressure: 2015 PSIG
Valve Outlet: 350
Certification Date: Jun 28, 2017

Expiration Date: Jun 28, 2025

This cylinder has been analytically certified as directly traceable to NIST with a total analytical uncertainty as stated below with a confidence level of 95%, in accordance with Airgas ISO procedures. There are no significant impurities which affect the use of this calibration mixture. All concentrations are on a volume/volume basis unless otherwise noted.

Do Not Use This Cylinder Below 100 psig.

ANALYTICAL RESULTS

Component	Requested Concentration	Actual Concentration	Total Relative Uncertainty
CARBON MONOXIDE	225.0 PPM	219.5 PPM	+/- 1% NIST Traceable
NITROGEN	Balance		

CALIBRATION STANDARDS

Type	Lot ID	Cylinder No	Concentration	Uncertainty	Expiration Date
NTRM	15060540	CC453521	491.9 PPM CARBON MONOXIDE/NITROGEN	+/- 0.6%	Jan 08, 2021

ANALYTICAL EQUIPMENT

Instrument/Make/Model	Analytical Principle	Last Multipoint Calibration
E/N 54 Nicolet 6700 CO	FTIR	Jun 15, 2017

Triad Data Available Upon Request

Approved for Release

Airgas
an Air Liquide company

Airgas Great Lakes region
Airgas USA, LLC
1290 Combermere Dr.
Troy, MI 48083
Airgas.com

CERTIFICATE OF ANALYSIS

Grade of Product: TRACEABILITY STANDARD

Customer: Ex. 4 CBI

Part Number: X02NI99T15ACPR3
Cylinder Number: CC75119
Laboratory: Ex. 4 CBI

Reference Number: 32-400936650-1
Cylinder Volume: 144.3 CF
Cylinder Pressure: 2015 PSIG
Valve Outlet: 350
Certification Date: Jun 28, 2017

Expiration Date: Jun 28, 2025

This cylinder has been analytically certified as directly traceable to NIST with a total analytical uncertainty as stated below with a confidence level of 95%, in accordance with Airgas ISO procedures. There are no significant impurities which affect the use of this calibration mixture. All concentrations are on a volume/volume basis unless otherwise noted.

Do Not Use This Cylinder Below 100 psig.

ANALYTICAL RESULTS

Component	Requested Concentration	Actual Concentration	Total Relative Uncertainty
CARBON MONOXIDE	900.0 PPM	916.4 PPM	+/- 1% NIST Traceable
NITROGEN	Balance		

CALIBRATION STANDARDS

Type	Lot ID	Cylinder No	Concentration	Uncertainty	Expiration Date
NTRM	05-1620	KAL004479	970.00 PPM CARBON MONOXIDE/NITROGEN	+/-0.36%	May 14, 2021

ANALYTICAL EQUIPMENT

Instrument/Make/Model	Analytical Principle	Last Multipoint Calibration
E/N 54 Nicolet 6700 1000 PPM CO	FTIR	Jun 17, 2017

Triad Data Available Upon Request

ACCREDITED

Certificate Number: 4199.01

Approved for Release

Lincheck

Test data

Test name:	**LinCheck Multipolynomial-CO L_1-R1-17Jul21-10h49**		
Bench:	Ex. 4 CBI	Date:	7/21/2017
Serial number:	7057	Time / duration:	10:49:07 AM / 20m 43s
Operator:	avlservice	Meas. duration [s]:	30
Legislation:	EPA / 1065	High. exp. conc. [ppm]:	903
		Low. conc. [ppm]:	629.94
Reference:	§1065.307 [76 FR 57445, Sept. 15, 2011]		

Analyzer

Tag:	CO2 L / CO SL	Cal gas [ppm]:	229.2
Serial number:	33548013	Range limit [ppm]:	250
Manufacturer:	AVL Emission	Range:	1

Gas divider

Serial number:	5654	Zero gas:	N2
Calib. date:	2015\19\08	Gas type:	CO

Zero/span adjust

Zero pt. [ppm]:	-0.11	Span pt. [ppm]:	229.24
Zero dev. [%FS]:	-0.05	Span dev. [%FS]:	0.02

Midspan Check

Span gas [ppm]:	--	Deviation [%]:	--
Measured [ppm]:	--		

Span gas

Name	COL_<250PPM	Concentration	229.2	Connected	1/16/17
Bottle No.	CC1153	Unit	ppm	Expiration	11/11/24

Test results	Actual polynomial	1. Order	Calculated polynomial	1. Order
Description	Calculated	Limits	Calculated	Limits
a1 slope	1.001	0.99 <= a1 <= 1.01	0.998	0.99 <= a1 <= 1.01
Xmin(a1-1)+a0 Interception	0.315	abs(a0) <= 4.515	0.303	abs(a0) <= 4.515
SEE Standard estimation of error	0.298	SEE <= 9.03	0.299	SEE <= 9.03
r2 coefficient of determination	1.000	r2 => 0.998	1.000	r2 => 0.998
Test state	Passed		Passed	
Coefficient A0	0.00000E+0		-1.78511E-5	
Coefficient A1	9.97099E-1		9.94240E-1	
Coefficient A2	0.00000E+0		0.00000E+0	
Coefficient A3	0.00000E+0		0.00000E+0	
Coefficient A4	0.00000E+0		0.00000E+0	

Lincheck

Test data

Test name:	**LinCheck Multipolynomial-CO L_1-R1-17Jul21-10h49**		
Bench:	**Ex. 4 CBI**	Date:	7/21/2017
Serial number:	7057	Time / duration:	10:49:07 AM / 20m 43s
Operator:	avlservice	Meas. duration [s]:	30
Legislation:	EPA / 1065	High. exp. conc. [ppm]:	903
		Low. conc. [ppm]:	629.94
Reference:	§1065.307 [76 FR 57445, Sept. 15, 2011]		

Index	GD Step	GD Conc. [ppm]	Analyzer [ppm]	Dev. [ppm]	Dev. [%]	Calc. [ppm]	Dev. [ppm]	Dev. [%]
1	0	0.000	0.013	0.013	0.005	-0.002	-0.002	-0.001
2	6	21.764	21.939	0.176	0.806	21.865	0.101	0.465
3	13	47.692	48.032	0.340	0.713	47.883	0.191	0.401
4	19	68.983	69.417	0.434	0.630	69.207	0.224	0.325
5	25	91.382	91.851	0.469	0.513	91.582	0.199	0.218
6	32	116.054	116.964	0.910	0.784	116.619	0.565	0.487
7	38	137.818	138.699	0.882	0.640	138.298	0.480	0.348
8	44	160.217	160.978	0.761	0.475	160.505	0.288	0.180
9	50	181.508	182.103	0.596	0.328	181.569	0.061	0.034
10	57	207.436	207.784	0.348	0.168	207.176	-0.260	-0.125
11	63	229.200	229.348	0.148	0.065	228.679	-0.521	-0.227

Operator signature:

Comments:

Lincheck

Test data

Test name:	**LinCheck Multipolynomial-CO L_1-R1-17Aug28-14h29**		
Bench:	**Ex. 4 CBI**	Date:	8/28/2017
Serial number:	7057	Time / duration:	2:29:27 PM / 19m 28s
Operator:	avlservice	Meas. duration [s]:	30
Legislation:	EPA / 1065	High. exp. conc. [ppm]:	903
		Low. conc. [ppm]:	553.22
Reference:	§1065.307 [76 FR 57445, Sept. 15, 2011]		

Analyzer

Tag:	CO2 L / CO SL	Cal gas [ppm]:	219.5
Serial number:	33548013	Range limit [ppm]:	250
Manufacturer:	AVL Emission	Range:	1

Gas divider

Serial number:	5654	Zero gas:	N2
Calib. date:	2015\19\08	Gas type:	CO

Zero/span adjust

Zero pt. [ppm]:	-0.28	Span pt. [ppm]:	219.73
Zero dev. [%FS]:	-0.11	Span dev. [%FS]:	0.09

Midspan Check

Span gas [ppm]:	--	Deviation [%]:	--
Measured [ppm]:	--		

Span gas

Name	COL_<250PPM	Concentration	219.5	Connected	8/10/17
Bottle No.	CC52649	Unit	ppm	Expiration	6/28/25

Test results	Actual polynomial	1. Order	Calculated polynomial	1. Order
Description	Calculated	Limits	Calculated	Limits
a1 slope	1.002	0.99 <= a1 <= 1.01	0.998	0.99 <= a1 <= 1.01
Xmin(a1-1)+a0 Interception	0.277	abs(a0) <= 4.515	0.290	abs(a0) <= 4.515
SEE Standard estimation of error	0.290	SEE <= 9.03	0.289	SEE <= 9.03
r2 coefficient of determination	1.000	r2 => 0.998	1.000	r2 => 0.998
Test state	Passed		Passed	
Coefficient A0	0.00000E+0		1.47653E-5	
Coefficient A1	9.97099E-1		9.93732E-1	
Coefficient A2	0.00000E+0		0.00000E+0	
Coefficient A3	0.00000E+0		0.00000E+0	
Coefficient A4	0.00000E+0		0.00000E+0	

Lincheck

Test data

Test name:	**LinCheck Multipolynomial-CO L_1-R1-17Aug28-14h29**		
Bench:	**Ex. 4 CBI**	Date:	8/28/2017
Serial number:	7057	Time / duration:	2:29:27 PM / 19m 28s
Operator:	avlservice	Meas. duration [s]:	30
Legislation:	EPA / 1065	High. exp. conc. [ppm]:	903
		Low. conc. [ppm]:	553.22
Reference:	§1065.307 [76 FR 57445, Sept. 15, 2011]		

Index	GD Step	GD Conc. [ppm]	Analyzer [ppm]	Dev. [ppm]	Dev. [%]	Calc. [ppm]	Dev. [ppm]	Dev. [%]
1	0	0.000	-0.013	-0.013	-0.005	-0.001	-0.001	-0.001
2	6	20.843	20.982	0.139	0.668	20.926	0.083	0.401
3	13	45.674	46.012	0.338	0.741	45.873	0.199	0.435
4	19	66.064	66.487	0.424	0.641	66.277	0.214	0.323
5	25	87.515	87.976	0.462	0.527	87.697	0.183	0.209
6	32	111.143	112.045	0.902	0.812	111.684	0.541	0.487
7	38	131.985	132.876	0.891	0.675	132.439	0.454	0.344
8	44	153.436	154.221	0.785	0.511	153.714	0.278	0.181
9	50	173.826	174.472	0.646	0.371	173.895	0.068	0.039
10	57	198.657	199.058	0.401	0.202	198.399	-0.258	-0.130
11	63	219.500	219.717	0.217	0.099	218.992	-0.508	-0.231

Operator signature:

Comments:

Lincheck

Test data

Test name:	**LinCheck Multipolynomial-CO L_1-R2-17Aug28-14h53**		
Bench:	**Ex. 4 CBI**	Date:	8/28/2017
Serial number:	7057	Time / duration:	2:53:12 PM / 20m 24s
Operator:	avlservice	Meas. duration [s]:	30
Legislation:	EPA / 1065	High. exp. conc. [ppm]:	903
		Low. conc. [ppm]:	4265.40
Reference:	§1065.307 [76 FR 57445, Sept. 15, 2011]		

Analyzer

Tag:	CO2 L / CO SL	Cal gas [ppm]:	916.4
Serial number:	33548013	Range limit [ppm]:	1000
Manufacturer:	AVL Emission	Range:	2

Gas divider

Serial number:	5654	Zero gas:	N2
Calib. date:	2015\19\08	Gas type:	CO

Zero/span adjust

Zero pt. [ppm]:	-0.03	Span pt. [ppm]:	916.91
Zero dev. [%FS]:	-0.00	Span dev. [%FS]:	0.05

Midspan Check

Span gas [ppm]:	--	Deviation [%]:	--
Measured [ppm]:	--		

Span gas

Name	COL_<1000PPM	Concentration	916.4	Connected	8/22/17
Bottle No.	CC75119	Unit	ppm	Expiration	6/28/25

Test results	Actual polynomial	1. Order	Calculated polynomial	1. Order
Description	Calculated	Limits	Calculated	Limits
a1 slope	1.000	0.99 <= a1 <= 1.01	0.996	0.99 <= a1 <= 1.01
Xmin(a1-1)+a0 Interception	2.133	abs(a0) <= 4.515	1.957	abs(a0) <= 4.515
SEE Standard estimation of error	1.086	SEE <= 9.03	1.089	SEE <= 9.03
r2 coefficient of determination	1.000	r2 => 0.998	1.000	r2 => 0.998
Test state	Passed		Passed	
Coefficient A0	0.00000E+0		-1.79967E-4	
Coefficient A1	1.00000E+0		9.96258E-1	
Coefficient A2	0.00000E+0		0.00000E+0	
Coefficient A3	0.00000E+0		0.00000E+0	
Coefficient A4	0.00000E+0		0.00000E+0	

Lincheck

Test data

Test name:	**LinCheck Multipolynomial-CO L_1-R2-17Aug28-14h53**		
Bench:	Ex. 4 CBI	Date:	8/28/2017
Serial number:	7057	Time / duration:	2:53:12 PM / 20m 24s
Operator:	avlservice	Meas. duration [s]:	30
Legislation:	EPA / 1065	High. exp. conc. [ppm]:	903
		Low. conc. [ppm]:	4265.40
Reference:	§1065.307 [76 FR 57445, Sept. 15, 2011]		

Index	GD Step	GD Conc. [ppm]	Analyzer [ppm]	Dev. [ppm]	Dev. [%]	Calc. [ppm]	Dev. [ppm]	Dev. [%]
1	0	0.000	0.173	0.173	0.017	-0.015	-0.015	-0.002
2	6	87.017	88.720	1.704	1.958	88.219	1.202	1.381
3	13	190.685	193.278	2.593	1.360	192.402	1.716	0.900
4	19	275.812	278.575	2.764	1.002	277.380	1.568	0.569
5	25	365.370	367.792	2.423	0.663	366.249	0.879	0.241
6	32	464.013	467.560	3.547	0.764	465.640	1.627	0.351
7	38	551.030	553.956	2.925	0.531	551.723	0.693	0.126
8	44	640.587	642.626	2.039	0.318	640.086	-0.502	-0.078
9	50	725.715	727.077	1.362	0.188	724.207	-1.508	-0.208
10	57	829.383	830.192	0.809	0.098	826.920	-2.464	-0.297
11	63	916.400	917.292	0.892	0.097	913.682	-2.718	-0.297

Operator signature:

Comments:

Midspan Check

Test data

Test name:	**Midspan Check-CO L_1-R1-17Jul21-11h9**		
Bench name:	Ex. 4 CBI	Date:	7/21/2017
Serial number:	7057	Time / duration:	11:09:56 AM / 04m 14s
Legislation:	EPA / 1065	Operator:	avlservice

Analyzer

Tag:	CO2 L / CO SL	Span gas [ppm]:	229.2
SN:	33548013	Range limit [ppm]:	250
Manufacturer:	AVL Emission	Range:	1

Pre-test zero/span adjust

Zero pt. [ppm]:	0.01	Span pt. [ppm]:	229.12
Zero dev. [%]:	0.00	Span dev. [%]:	-0.03

Span gas

Name	COL_<250PPM	Concentration	229.2	Connected	1/16/17
Bottle No.	CC1153	Unit	ppm	Expiration	11/11/24

Midspan gas

Name	COL_<100PPM	Concentration	90.55	Connected	7/29/15
Bottle No.	CC12978	Unit	ppm	Expiration	3/6/21

Midspan Check

Zero/span gas path:	direct
Midspan conc. [ppm]:	90.55
Measured value ppm]:	91.30
Midspan error [%]:	0.83
Result:	**Passed**

Airgas
an Air Liquide company

Airgas Great Lakes region
Airgas USA, LLC
2009 Bellaire
Royal Oak, MI 48067
Airgas.com

CERTIFICATE OF ANALYSIS

Grade of Product: ULTRA ZERO

Part Number:	AI UZC23	Reference Number:	32-400778151-1
Cylinder Number:	NISSANAIR12PK4	Cylinder Volume:	3744.0 CF
Laboratory:	Ex. 4 CBI	Cylinder Pressure:	2640 PSIG
Analysis Date:	Sep 27, 2016	Valve Outlet:	590
Lot Number:	32-400778151-1		

ANALYTICAL RESULTS

Component	Requested Purity	Certified Concentration
AIR		
CO + CO2	< 1.0 PPM	< 1 PPM
THC	< 0.1 PPM	< 0.1 PPM
Percent Oxygen	20-22 %	21.30 %
Moisture	< 2.0 PPM	< 2 PPM

Permanent Notes: Produced at: 2009 Bellaire Ave, Royal Oak, MI 48067

Impurities verified against analytical standards traceable to NIST by weight and/or analysis.

Signature on file
Approved for Release

Mahindra
North American Technical Center, Inc.

MNATC, Inc.
1055 West Square Lake Road
Troy, MI 48098-2523
Phone: (248) 268-6600

CONFIDENTIAL BUSINESS INFORMATION

September 13, 2017

Mr. David Swain
Office of Transportation and Air Quality
US Environmental Protection Agency
2000 Traverwood Drive
Ann Arbor, MI 48105

RE: Supplemental Information to Application for Certification for Engine Family JMNCX2.52DM1

[THIS DOCUMENT CONTAINS CONFIDENTIAL BUSINESS INFORMATION]

Mahindra North American Technical Center, Inc. (MNATC) would like to submit this supplemental information to its certificate of conformity application for a model year (MY) 2018 All-Terrain Vehicle, engine family **JMNCX2.52DM1**.

MNATC, Inc. appreciates this opportunity to further clarify that the engine in this vehicle is a non-road engine as defined by CAA §216(2)(10). MNATC, Inc. would also like to clarify that this vehicle is a non-road vehicle as defined by CAA §216(2)(11).

The Mahindra Ex. 4 CBI a new non-road (off-road) vehicle, derived from the Mahindra THAR, but with a unique combination of powertrain and body components and sub-systems that makes it suitable only for non-road use.

Additionally, the Ex. 4 CBI will come with warning labels to inform consumers that the vehicle is for off-road use only and is not equipped or approved for operation on public streets, roads, or highways.

As requested, MNATC, Inc. hereby provides a list of features that make the Ex. 4 CBI only suitable for non-road (off-road) usage, please see Attachment A.

Should you have any questions regarding this application for certification or require any additional information, please do not hesitate to contact Henrique Martins at (248) 268-6600 or via email at martins.henrique@mahindra.com.

Sincerely,

Henrique R. Martins
Manager, Technical and Regulatory Affairs
Mahindra North American Technical Center Inc.

13 SEPT, 2017
Richard P. Haas
President and CEO
Mahindra North American Technical Center Inc.

Mahindra Rise.

Mahindra
North American Technical Center, Inc.

MNATC, Inc.
1055 West Square Lake Road
Troy, MI 48098-2523
Phone: (248) 268-6600

CONFIDENTIAL BUSINESS INFORMATION

ATTACHMENT A – LIST OF Ex. 4 CBI RELEVANT NON-ROAD FEATURES

POWERTRAIN – Engine & Transmission			
System	US Ex. 4 CBI	India Thar	Comments
Engine	PART No. 0301BAB03570N 403_ENGINE ASSY LCCR	Part No. 0301BAB02590N ENG ASSY LCCR BS4 NON AC PSP	
Manual Transmission	0703AAD06130N	0703AD1540N	Manual Transmission modified for Left Hand Drive
Engine Control Unit (ECU) Engine Calibration	US Non-road ("Off-road") Application. ECU complies with 40 CFR 1051	Indian On-Road Application Specific ECU to meet India BS4	M540 Calibration designed for Non-road ("Off-road") use and to comply with US Non-road ("Off-road") standards.
	Including maximum speed limiter (45mph)	N/A	M540 intentionally speed limited through unique fueling restriction for Non-road ("Off-road") use
	Seat Belt Speed Limiter (maximum speed capability of the vehicle is limited to 15mph if seat belt in unbuckled)	N/A	M540 meets ANSI ROHVA requirement for Non-road ("Off-road") Vehicles
	Additional Controls for unique US Non-road ("Off-road") application	N/A	For example intake heater control.
Cold Weather Package	Intake Air Heater System	N/A	Heater assembly and unique hoses, clamps and wiring, unique US feature.
Engine Ventilation	Closed Crankcase breather system	Open "road draft" tube	US system compliant with 40 CFR 1051 closed crankcase breather system requirements.
Hot End Exhaust and After Treatment	Non-road ("Off-road") application Specific Front exhaust pipe assembly including catcon.	Indian On-Road Application Specific Front exhaust pipe assembly including catcon.	M540 front exhaust pipe assembly has very different configuration to address Non-road ("Off-road") specific packaging/durability issues.
Cold End Exhaust	Non-road ("Off-road") Application Specific mid and rear exhaust assemblies	Indian On-Road Application Specific mid and rear exhaust assemblies	US Non-road ("Off-road") exhaust completely repackaged – no muffler, inclusion of US Forest Service approved spark arrestor.
Fuel Delivery	Non-road ("Off-road") Application Specific fuel delivery system	Indian On-Road Application Specific fuel delivery system	Unique sub-system components in US application.

Mahindra
North American Technical Center, Inc.

MNATC, Inc.
1055 West Square Lake Road
Troy, MI 48098-2523
Phone: (248) 268-6600

CONFIDENTIAL BUSINESS INFORMATION

ATTACHMENT A – LIST OF Ex. 4 CBI RELEVANT NON-ROAD FEATURES (continued)

CHASSIS			
System	US Ex. 4 CBI	India Thar	Comments
Frame			
Wheels & Tires			
Brakes			
Power Steering			
System			
Body Structures			
Occupant Protection System (OPS)			
Windshield			
Defroster vents			

Ex. 4 CBI

MNATC, Inc.
1055 West Square Lake Road
Troy, MI 48098-2523
Phone: (248) 288-6600

Mahindra
North American Technical Center Inc.

CONFIDENTIAL BUSINESS INFORMATION

ATTACHMENT A – LIST OF Ex. 4 CBI RELEVANT NON-ROAD FEATURES (continued)

BODY - INTERIOR			
System	US Ex. 4 CBI	India Thar	Comments
Instrument Panel	Ex. 4 CBI		
Turn Signal Indicator Switch			
Steering Column			

BODY – EXTERIOR & Exterior Lighting			
System	US Ex. 4 CBI	India Thar	Comments
Mirrors	Ex. 4 CBI		
Registration Lamp			
Registration Bracket			
Turn Signals Front & Rear			

ELECTRICAL			
System	US Ex. 4 CBI	India Thar	Comments
Clock Spring	Ex. 4 CBI		
Wiring Harness			
Battery			

Mahindra
Rise.

Message

From: MARTINS HENRIQUE [MARTINS.HENRIQUE@mahindra.com]
Sent: 6/26/2017 6:17:51 PM
To: Swain, David [swain.david@epa.gov]
CC: Jackson, Cleophas [jackson.cleophas@epa.gov]; LaCroix, John [lacroix.john@epa.gov]; Lit-Mian Chan [lchan@ramboll.com]; Paul Kerns [PKerns@ramboll.com]; CORNELL TROY [CORNELL.TROY@mahindra.com]
Subject: RE: MNATC Letter of Intent

Dear David Swain,
We will only execute intermediate maintenance service after the intermediate emissions test has been performed. This was already described in the test plan, but I will make sure to re-emphasize that with the testing lab.

I will put together a proposed production schedule and I am glad to discuss that with you.

Thanks and kindest regards,

Henrique R. Martins

Sr Manager
Technical and Regulatory Affairs
Certification, Homologation, and Compliance
Mahindra Automotive North American Technical Center
1055 W Square Lake Road
Troy, MI 48098
(248) 268-6600

Mahindra Rise.

From: Swain, David [mailto:swain.david@epa.gov]
Sent: Monday, June 26, 2017 11:27 AM
To: MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Cc: Jackson, Cleophas <jackson.cleophas@epa.gov>; LaCroix, John <lacroix.john@epa.gov>; Lit-Mian Chan <lchan@ramboll.com>; Paul Kerns <PKerns@ramboll.com>; CORNELL TROY <CORNELL.TROY@mahindra.com>
Subject: RE: MNATC Letter of Intent

Mr. Henrique,
In addition to our previous discussions, please include a proposed production schedule assuming that the application process from submission to approval will take 90 days. Ex. 4 CBI

Ex. 4 CBI

-David Swain

From: MARTINS HENRIQUE [mailto:MARTINS.HENRIQUE@mahindra.com]
Sent: Friday, March 31, 2017 4:55 PM
To: Swain, David <swain.david@epa.gov>
Cc: Jackson, Cleophas <jackson.cleophas@epa.gov>; LaCroix, John <lacroix.john@epa.gov>; Lit-Mian Chan

<lchan@ramboll.com>; Paul Kerns <PKerns@ramboll.com>; CORNELL TROY <CORNELL.TROY@mahindra.com>
Subject: MNATC Letter of Intent

Dear Mr. Swain,

Please find attached a letter of intent for our ATV certification plan. The LOI has a few questions that we would like to discuss with you.
Please let us know when would be convenient for you to have a call.

We would like to thank you and your team for your guidance and attention to this matter.

Thanks in advance & best regards,

Henrique R. Martins

Certification & Homologation Manager and Global Regulatory Advisor
Mahindra North American Technical Center
1055 W Square Lake Road
Troy, MI 48098
(248) 268-6600

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Message

From: MARTINS HENRIQUE [MARTINS.HENRIQUE@mahindra.com]
Sent: 9/26/2016 6:54:48 PM
To: Swain, David [swain.david@epa.gov]
CC: Jackson, Cleophas [jackson.cleophas@epa.gov]; Lit Chan [lchan@ramboll.com]; Paul Kerns [PKerns@ramboll.com]; CORNELL TROY [CORNELL.TROY@mahindra.com]
Subject: RE: Follow-Up

Dear Mr. Swain,

Thank you for the time spent reviewing the presentation and the material sent to Mr. Jackson on September 14, 2016.

Your guidance and recommendations for our ATV program are greatly appreciated, as we will move forward with our certification plans under 40 CFR 1051.

Should you have questions or further comments, please do not hesitate to contact me.

Thanks and kind regards,

Henrique R. Martins

Regulatory Advisor
Mahindra North American Technical Center
1055 W Square Lake Road
Troy, MI 48098

From: Lit Chan [mailto:lchan@ramboll.com]
Sent: Monday, September 26, 2016 2:31 PM
To: MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Subject: FW: Follow-Up

Hi Henrique,

Please see David Swain's response to your email to Cle Jackson regarding formal preliminary approval request under 40 CFR 1051.210 and a presentation about our company and our concept vehicle.

Please feel free to follow up with David or Cle on any questions you might have.

Best regards,
Lit

Lit-Mian Chan | Principal
RAMBOLL ENVIRON
773 San Marin Drive, Suite 2115 | Novato, CA 94998
T: +1 415 899 0762 | F: +1 415 899 0707 | M: +1 916 337 1479
LChan@ramboll.com
www.ramboll-environ.com

From: Swain, David [mailto:swain.david@epa.gov]
Sent: Friday, September 23, 2016 12:47 PM
To: Lit Chan

Cc: Jackson, Cleophas
Subject: RE: Follow-Up

Hi Lit,
Please submit the application for your ATV so that we may evaluate it.
Thanks,
-Dave

From: Lit Chan [mailto:lchan@ramboll.com]
Sent: Friday, September 23, 2016 3:29 PM
To: Swain, David <swain.david@epa.gov>
Subject: FW: Follow-Up

fyi

Lit-Mian Chan | Principal
RAMBOLL ENVIRON
773 San Marin Drive, Suite 2115 | Novato, CA 94998
T: +1 415 899 0762 | F: +1 415 899 0707 | M: +1 916 337 1479
LChan@ramboll.com
www.ramboll-environ.com

From: Lit Chan
Sent: Tuesday, September 20, 2016 12:50 PM
To: 'Jackson, Cleophas'
Subject: RE: Follow-Up

Hi Cle,

I left you a vmail yesterday, wanting to check in with you to see if you have a chance to review the MNATC letter and presentation.

Our client is anxious to hear from you, and would like to meet with you and your team to further discuss their plan and your guidance on their offroad and recreation vehicle product and business development.

They have also asked me to extend their invitation to you and your team to visit their facility. Please kindly get back to us on your thoughts. Thanks.

Best regards,
Lit

Ex. 4 CBI

Lit-Mian Chan | Principal
RAMBOLL ENVIRON
773 San Marin Drive, Suite 2115 | Novato, CA 94998
T: +1 415 899 0762 | F: +1 415 899 0707 | M: +1 916 337 1479
LChan@ramboll.com
www.ramboll-environ.com

From: Jackson, Cleophas [mailto:jackson.cleophas@epa.gov]
Sent: Wednesday, September 14, 2016 1:55 PM
To: Lit Chan
Cc: MARTINS HENRIQUE
Subject: RE: Follow-Up

Received. Thank you.

From: Lit Chan [mailto:lchan@ramboll.com]
Sent: Wednesday, September 14, 2016 4:23 PM
To: Jackson, Cleophas <jackson.cleophas@epa.gov>
Cc: MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Subject: Fwd: Follow-Up

Hi Cle,

Henrique is concerned that this email might not get to you. Thus, I am forwarding this to you just in case. We apologize for multiple emails if you did receive it. Thanks.

Best regards,
Lit

Begin forwarded message:

> **From:** "MARTINS HENRIQUE" <MARTINS.HENRIQUE@mahindra.com>
> **To:** "Lit Chan" <lchan@ramboll.com>, "Jackson, Cleophas" <jackson.cleophas@epa.gov>
> **Subject: RE: Follow-Up**
>
> Dear Mr. Jackson,
>
> I hope all is well with you.
> I am sorry to hear that my previous email did not go through.
>
> I am resending the message with the attachments, please let me know if you receive it.
>
> Once again sorry for any inconveniences.
>
> Thanks and kind regards,
>
> *Henrique R. Martins*
>
> Regulatory Advisor
> Mahindra North American Technical Center
> 1055 W Square Lake Road
> Troy, MI 48098

From: Lit Chan [mailto:lchan@ramboll.com]
Sent: Wednesday, September 14, 2016 9:58 AM
To: Jackson, Cleophas <jackson.cleophas@epa.gov>
Cc: MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Subject: Re: Follow-Up

Cle,

Thanks for getting back to me. I am sorry to hear that you didn't received the email with attachments. It was sent by Henrique Martin of MNATC, whom is copied here. I will ask Henrique to resend.

Best regards,
Lit

On Sep 14, 2016, at 6:23 AM, Jackson, Cleophas <jackson.cleophas@epa.gov> wrote:

> Lit,
>
> I received your voicemail message, however I don't recall receiving the document that you referenced. If there is a document that we should review, would you please ask your client to resend it. Thank you.
>
> Cleophas Jackson, Director
> Gasoline Engine Compliance Center
> Compliance Division
> United States Environmental Protection Agency
> 2000 Traverwood Drive
> Ann Arbor, MI 48105
> (734) 214-4824
> (734) 214-4053 FAX

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Message

From: LaCroix, John [lacroix.john@epa.gov]
Sent: 6/8/2016 6:24:56 PM
To: Lit Chan [lchan@environcorp.com]; cornell.troy@mahindra.com
CC: Swain, David [swain.david@epa.gov]; Jackson, Cleophas [jackson.cleophas@epa.gov]
Subject: FW: help
Attachments: HMC RV cert preview topics -2014 & later.docx

Lit,

Attached is a list of pre-cert topics that we will need response to prior to scheduling a meeting with your client, Mahindra Vehicle Manufacturing Ltd. Once we receive your client's response we will review them and establish a date for a short meeting.

John LaCroix
Senior Environmental Employment (SEE)
Cooperative with the Compliance Division
USEPA
734-214-4463

Topics of Certification and Compliance Preview Meeting for Coming MY

EPA/GECC/HMC-RV

A. General:

1. Organization Structure:

Provide an overview chart of your organization. Provide a list of staff responsible for certification and compliance program with details of their responsibility and contacting information.

2. Affiliated Entities:

Provide a list of all (domestic and foreign) affiliated entities and describe your business relationships with them (such as engine and catalytic convertor suppliers, dealers, assembly plants, certification consultants, exhaust and permeation emission testing labs, etc.).

3. Product Line Plan:

Provide an overview of production lines for the incoming MY, including any new technologies related to engines, carburetors, transmissions, emission controls, etc. that may be introduced within next two or three years.

4. Production Vehicle Conformity Assurance Plan:

Provide an overview of production vehicle compliance assurance plan, including any component/vehicle inspections, production line tests, and/or assurance procedures that should ensure production vehicle compliance.

5. In-use Vehicle Compliance Assurance Plan:

Provide an overview of in-use vehicle compliance assurance plan, detailing measures of tracking, recording, verification, reporting, recall (if necessary) and fixing of any potential/actual emission defects.

Summarize any existing recalls.

6. Consultant(s)/Emissions Test Lab Information:

Provide updated contact information of your consultant(s) and emissions testing lab(s).

B. Certification:

1. Overall Certification Compliance Plan:

If use FEL and ABT to demonstrate compliance, provide a detailed compliance plan, including previous MY credit/deficit, if any.

2. **Incoming MY Certification/Testing Plan:**
   (a) Provide certification plan in a spreadsheet that lists:
      a. vehicle categories
      b. engine families/permeation families
         i. models covered by an EF
         ii. engine type
         iii. all displacements, if more than one
         iv. all curb masses, if more than one
         v. key emission control components
         vi. predicted sales of each engine family
         vii. critical dates related to certification
         viii. testing method used for exhaust (engine vs. vehicle chassis) and permeation (testing vs. certify-by-design)
         ix. Intended sales area (50 states/49 states/Canada)

   (b) Provide your testing plan for each EF in a spreadsheet that lists:
      a. original cert testing date and results
      b. new configurations, calibrations, other changes, if any
      c. defects, recalls, or warranty issues, if any
      d. new cert testing plan, if necessary
      e. confirmatory tests history and plan
      f. PLT history and plan, if applicable

3. Describe in general how you conduct service accumulation and provide a sample record of service accumulation.

(C) <u>Pre-approvals</u>

Identify any issues that may need advice or pre-approval from EPA (alternative durability procedures or emissions testing methods, alternative labeling issues, etc).

(D) <u>Your Questions to EPA</u>

Notes:

1. Please work with your EPA Cert Rep to schedule your meeting date/time.
2. Please send your responses to EPA no less than **<u>two working days</u>** prior to your meeting date so that we can organize an effective preview for your certification needs.
3. Unless you tell us not to, your responses may be shared with ABR and/or Environment Canada. They may also listen into your pre-view meeting.

Message

From: Lit Chan [lchan@ramboll.com]
Sent: 8/19/2016 5:21:52 PM
To: Jackson, Cleophas [jackson.cleophas@epa.gov]
CC: Swain, David [swain.david@epa.gov]; LaCroix, John [lacroix.john@epa.gov]
Subject: RE: MNATC Letter of Intent (LOI) with an appendix of the EPA questionnaire (Manufacture Code of MNC)

Cle,

Thanks for the quick response and outlook invite for our meeting on August 29, 3-4pm Eastern Time. I have forwarded your invite to the MNATC team.

Have a good weekend!

Best regards,
Lit

Lit-Mian Chan | Principal
RAMBOLL ENVIRON
773 San Marin Drive, Suite 2115 | Novato, CA 94998
T: +1 415 899 0762 | F: +1 415 899 0707 | M: +1 916 337 1479
LChan@ramboll.com
www.ramboll-environ.com

From: Lit Chan
Sent: Friday, August 19, 2016 9:07 AM
To: Jackson, Cleophas
Cc: Swain, David; LaCroix, John
Subject: Re: MNATC Letter of Intent (LOI) with an appendix of the EPA questionnaire (Manufacture Code of MNC)

Hi Cle,

I am writing to check with you to see if you can confirm our meeting on August 29. The time is flexible for the MNATC team. We look forward to the opportunity to introduce MNATC, as well as to discuss their certification and compliance program to you and your team. Thanks.

Best regards,
Lit

On Aug 11, 2016, at 7:00 AM, Jackson, Cleophas <jackson.cleophas@epa.gov> wrote:

> Lit,
>
> Thank you for your message. I am on AL this week but I will follow up when I return next week.
>
> Sent from my iPhone
>
> On Aug 10, 2016, at 2:31 PM, Lit Chan <lchan@ramboll.com> wrote:
>
> > Hi Mr. Jackson,
> >
> > As per my vmail to you this morning, we would appreciate if we could set up an introductory meeting with you and your recreation vehicle team and our client

Mahindra North America Technical Center (Manufacture Code of MNC), whom is a new recreation vehicle manufacturer. As presented in the attached LOI and responses to EPA pre-meeting questionnaire, MNATC would like to discuss and present their company, vehicle development and production program, and emission certification and compliance program with your team, and seek your comments and guidance on the development of these programs.

David said that he is available on August 29, and asked that I check with you on your schedule. Please let me know if the date would work for you and your team. We are flexible on the time, or another date/time if Aug 29 won't work. Also, I expect that this will be a short meeting (half an hour or so).

I look forward to hearing back from you. Thanks.

Best regards,
Lit

Lit-Mian Chan | Principal
<image001.png>
773 San Marin Drive, Suite 2115 | Novato, CA 94998
T: +1 415 899 0762 | F: +1 415 899 0707 | M: +1 916 337 1479
LChan@ramboll.com
www.ramboll-environ.com

From: Paul Kerns
Sent: Monday, August 8, 2016 2:39 PM
To: CORNELL TROY (CORNELL.TROY@mahindra.com); Ex. 4 CBI Ex. 4 CBI HORTON JOHN (HORTON.JOHN@mahindra.com); MARTINS HENRIQUE (MARTINS.HENRIQUE@mahindra.com)
Cc: Lit Chan
Subject: FW: MNATC Letter of Intent (LOI) with an appendix of the EPA questionnaire (Manufacture Code of MNC)

Dear MNATC Team,

We are forwarding you the email with the LOI with the EPA questionnaire attached that was submitted to David Swain, who manages the ATV/UTV certification group at the EPA OTAQ office in Ann Arbor. Lit Chan will be contacting David tomorrow to discuss the LOI and to setup a meeting with the EPA. Let us know if you have any questions.

Yours sincerely
Paul Kerns

Senior Manager
Mobile Emissions

D +1 415 899 0731
M +1 586 354 0033
PKerns@ramboll.com

Ramboll Environ
773 San Marin Drive
Suite 2115

Novato, CA 94998
USA
www.ramboll-environ.com

<image003.png>

From: Paul Kerns
Sent: Monday, August 08, 2016 2:30 PM
To: 'swain.david@epa.gov'
Cc: Lit Chan
Subject: MNATC Letter of Intent (LOI) with an appendix of the EPA questionnaire (Manufacture Code of MNC)

Office of Transportation and Air Quality
U.S. Environmental Protection Agency
Attn: Mr. David Swain

Dear David,

Attached is the Mahindra North American Technical Center, Inc.'s (MNATC) Letter of Intent (LOI) with an appendix of the EPA questionnaire (Manufacture Code of MNC). Lit Chan will be contacting you tomorrow to discuss setting up a meeting with the MNATC team. Let us know, if you have any questions.

Yours sincerely
Paul Kerns

Senior Manager
Mobile Emissions

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M +1 586 354 0033
PKerns@ramboll.com

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<image003.png>

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addressee, you may not review, copy, distribute or disclose to anyone the message or any information contained within. If you have received this message in error, please contact the sender by electronic reply to email@ramboll.com and immediately delete all copies of the message.

<MNATC LOI and EPA Questionaire_08-08-2016_FL_JH_pk.pdf>

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Message

From: Lit-Mian Chan [lchan@ramboll.com]
Sent: 9/7/2017 4:01:21 PM
To: Swain, David [swain.david@epa.gov]
CC: LaCroix, John [lacroix.john@epa.gov]; Chen, Emily [Chen.Emily@epa.gov]
Subject: RE: Mahindra - JMNCX2.52DM1

Okay, David. MNATC will get responses from Ex. 4 CBI Thanks. Lit

Lit-Mian Chan | Principal
773 San Marin Drive, Suite 2115 | Novato, CA 94998
T: +1 415 899 0751 | F: +1 415 899 0707 | M: +1 916 337 1479
LChan@ramboll.com
www.ramboll-environ.com
Note: I will be out of the office from Sept 25 to Oct 13, 2017 with limited email and vmail accessibility.

From: Swain, David [mailto:swain.david@epa.gov]
Sent: Wednesday, September 6, 2017 5:48 PM
To: Lit-Mian Chan <lchan@ramboll.com>
Cc: LaCroix, John <lacroix.john@epa.gov>; Chen, Emily <Chen.Emily@epa.gov>
Subject: RE: Mahindra - JMNCX2.52DM1

Ok, please ask them to report in the units specified in the CFR, and that is: $nt/(km/h)^2$

If the CO ppm from the sample bag is so low, then Why use such a high range? The sample bag is 11% of the full scale of the range. The sample should be between 20 and 80 % of the span value to obtain the most accurate results.

From: Lit-Mian Chan [mailto:lchan@ramboll.com]
Sent: Wednesday, September 06, 2017 8:40 PM
To: Swain, David <swain.david@epa.gov>
Cc: LaCroix, John <lacroix.john@epa.gov>; Chen, Emily <Chen.Emily@epa.gov>
Subject: Re: Mahindra - JMNCX2.52DM1

Hi David,

Thanks for the email and the nonroad CAA language. As for the "C" dyno coefficient, I noticed that too and then I realized it has a different unit. Once converted, the value was correct. I also noticed the negative values for Bag 2 test data. The CO emissions for Diesel engine is very low especially when it is equipped with a DOC. I think it is just instrument noise but I will get Ex. 4 CBI to provide an explanation. We will get back to you soon. Thanks.

Best regards,
Lit

On Sep 6, 2017, at 5:05 PM, Swain, David <swain.david@epa.gov> wrote:

> Hi Lit,
> If this is a non-road vehicle with a non-road engine, a statement like this is needed on the manufacturer letterhead to speed up the certification process:
> The engine in this vehicle is a non-road engine as defined by CAA §216(2)(10).
> This vehicle is a non-road vehicle as defined by CAA §216(2)(11).

Please also provide a description of the unique features this vehicle has that make this a non-road vehicle.

Also, I noticed that the vehicle was tested with the wrong "C" force coefficient for a vehicle weighing 1540 kg. The test data report says F2 = 0.499, but it is supposed to be 0.0385. Please ask Ex. 4 CBI for an explanation.

In addition, the Dilution Air sample measurement for CO was negative. This is an impossible measurement in nature. Please ask Ex. 4 CBI to check on the expiration dates on their CO zero and span bottles.

Thanks,
-Dave

Message

From: Lit Chan [lchan@ramboll.com]
Sent: 8/11/2016 2:33:49 PM
To: Jackson, Cleophas [jackson.cleophas@epa.gov]
CC: Swain, David [swain.david@epa.gov]; LaCroix, John [lacroix.john@epa.gov]
Subject: Re: MNATC Letter of Intent (LOI) with an appendix of the EPA questionnaire (Manufacture Code of MNC)

Thanks, Cle. Have a good trip. Lit

On Aug 11, 2016, at 7:00 AM, Jackson, Cleophas <jackson.cleophas@epa.gov> wrote:

Lit,

Thank you for your message. I am on AL this week but I will follow up when I return next week.

Sent from my iPhone

On Aug 10, 2016, at 2:31 PM, Lit Chan <lchan@ramboll.com> wrote:

Hi Mr. Jackson,

As per my vmail to you this morning, we would appreciate if we could set up an introductory meeting with you and your recreation vehicle team and our client Mahindra North America Technical Center (Manufacture Code of MNC), whom is a new recreation vehicle manufacturer. As presented in the attached LOI and responses to EPA pre-meeting questionnaire, MNATC would like to discuss and present their company, vehicle development and production program, and emission certification and compliance program with your team, and seek your comments and guidance on the development of these programs.

David said that he is available on August 29, and asked that I check with you on your schedule. Please let me know if the date would work for you and your team. We are flexible on the time, or another date/time if Aug 29 won't work. Also, I expect that this will be a short meeting (half an hour or so).

I look forward to hearing back from you. Thanks.

Best regards,
Lit

Lit-Mian Chan | Principal
<image001.png>
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LChan@ramboll.com
www.ramboll-environ.com

From: Paul Kerns
Sent: Monday, August 8, 2016 2:39 PM
To: CORNELL TROY (CORNELL.TROY@mahindra.com); Ex. 4 CBI Ex. 4 CBI HORTON JOHN (HORTON.JOHN@mahindra.com); MARTINS HENRIQUE

(MARTINS.HENRIQUE@mahindra.com)
Cc: Lit Chan
Subject: FW: MNATC Letter of Intent (LOI) with an appendix of the EPA questionnaire (Manufacture Code of MNC)

Dear MNATC Team,

We are forwarding you the email with the LOI with the EPA questionnaire attached that was submitted to David Swain, who manages the ATV/UTV certification group at the EPA OTAQ office in Ann Arbor. Lit Chan will be contacting David tomorrow to discuss the LOI and to setup a meeting with the EPA. Let us know if you have any questions.

Yours sincerely
Paul Kerns

Senior Manager
Mobile Emissions

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M +1 586 354 0033
PKerns@ramboll.com

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Suite 2115
Novato, CA 94998
USA
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<image003.png>

From: Paul Kerns
Sent: Monday, August 08, 2016 2:30 PM
To: 'swain.david@epa.gov'
Cc: Lit Chan
Subject: MNATC Letter of Intent (LOI) with an appendix of the EPA questionnaire (Manufacture Code of MNC)

Office of Transportation and Air Quality
U.S. Environmental Protection Agency
Attn: Mr. David Swain

Dear David,

Attached is the Mahindra North American Technical Center, Inc.'s (MNATC) Letter of Intent (LOI) with an appendix of the EPA questionnaire (Manufacture Code of MNC). Lit Chan will be contacting you tomorrow to discuss setting up a meeting with the MNATC team. Let us know, if you have any questions.

Yours sincerely
Paul Kerns

Senior Manager
Mobile Emissions

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M +1 586 354 0033
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<image003.png>

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<MNATC LOI and EPA Questionaire_08-08-2016_FL_JH_pk.pdf>

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Message

From: Lit-Mian Chan [lchan@ramboll.com]
Sent: 9/6/2017 6:46:49 PM
To: Swain, David [swain.david@epa.gov]
Subject: RE: Mahindra - JMNCX2.52DM1

Hi David,

It was good talking with you now. As per our discussion, please send me the nonroad application CAA language, and I will work with MNATC to generate the letter along with table listing the unique features of this ATV to submit to the VERIFY.

I look forward to receiving your email. Thanks.

Best regards,
Lit

Lit-Mian Chan | Principal
773 San Marin Drive, Suite 2115 | Novato, CA 94998
T: +1 415 899 0751 | F: +1 415 899 0707 | M: +1 916 337 1479
LChan@ramboll.com
www.ramboll-environ.com
Note: I will be out of the office from Sept 25 to Oct 13, 2017 with limited email and vmail accessibility.

From: Lit-Mian Chan
Sent: Wednesday, August 30, 2017 7:08 AM
To: David Swain <swain.david@epa.gov>
Subject: Fwd: Mahindra - JMNCX2.52DM1

Hi David,

As per our call just now. Here is the cert app that I was asking the status on. I appreciate your prompt review of this cert app as our client can't wait to build these ATVs in Michigan! Please let me know if you have any questions. Thanks.

Best regards,
Lit

Begin forwarded message:

> **From:** "LaCroix, John" <lacroix.john@epa.gov>
> **Date:** August 23, 2017 at 9:32:31 AM PDT
> **To:** Lit-Mian Chan <lchan@ramboll.com>
> **Cc:** "Swain, David" <swain.david@epa.gov>
> **Subject: RE: Mahindra - JMNCX2.52DM1**
>
> Thanks for the prompt reply Lit. I'll fun this by D. Swain also since he's the one who has to approve it. I'll include this explanation in my audit. Thanks.
>
> John LaCroix

Senior Environmental Employment (SEE)
Cooperative with the Compliance Division
USEPA
734-214-4463

From: Lit-Mian Chan [mailto:lchan@ramboll.com]
Sent: Wednesday, August 23, 2017 10:52 AM
To: LaCroix, John <lacroix.john@epa.gov>
Subject: RE: Mahindra - JMNCX2.52DM1

Hi John,

Sorry for the confusion, I am the EPA certification representative for the MNTAC in this certification application, and they are the owner of the certification application. I understand that you only deal with me on this cert app.

As for your questions on the common rail fuel system, cooled variable EGR and DOC, this engine family has a diesel engine and these terms are related to its diesel engine. The common rail fuel system is a high pressure direct fuel injection system, where all of the fuel injectors share a common high pressure fuel storage chamber. As for the EGR system, modern diesel engines cool its EGR via a heat exchanger to allow the introduction of a greater amount of EGR into the engine, and the amount of EGR is controlled by engine control unit depending on the NOx reduction needs (i.e. cooled variable EGR). You are correct that DOC stands for diesel oxidation catalyst, which is oxidation catalyst designed for diesel engines.

Please let me know if you have any further questions. Thanks.

Best regards,
Lit

Lit-Mian Chan | Principal
773 San Marin Drive, Suite 2115 | Novato, CA 94998
T: +1 415 899 0751 | F: +1 415 899 0707 | M: +1 916 337 1479
LChan@ramboll.com
www.ramboll-environ.com
Note: I will be out of the office from Sept 25 to Oct 13, 2017 with limited email and vmail accessibility.

From: LaCroix, John [mailto:lacroix.john@epa.gov]
Sent: Wednesday, August 23, 2017 4:10 AM
To: Lit-Mian Chan
Subject: Mahindra - JMNCX2.52DM1

Lit,
Need clarification. Forgive my ignorance but in the application on CSI.4 the fuel system is referred to as "Common Rail System". Please explain what this is. I'm Used to either carburetor or fuel injection of some type. In the same section you refer to the EGR as "cooled variable" EGR. I have not heard this term before either so, I guess I need you to educate me. To clarify something else, The cover sheet of the application it shows MNATC as the applicant and then your company as "Assisted by". Just so you know, I will not deal with two different entities on the same application. If you are the certification representative authorized to interact with

EPA then I will deal with you, but not either of the two individuals from MNATC. On the VECI label for the Exhaust Emission Control System you show DOC which I'm sure identifies the oxidation catalyst but, again, to educate me, what does the "D" stand for? Diesel? I will need Dave Swain's feedback on this application before I can finish my review.

John LaCroix
Senior Environmental Employment (SEE)
Cooperative with the Compliance Division
USEPA
734-214-4463

Message

From: MARTINS HENRIQUE [MARTINS.HENRIQUE@mahindra.com]
Sent: 11/26/2018 7:58:28 PM
To: Swain, David [swain.david@epa.gov]
CC: Green, Donzell [green.donzell@epa.gov]; Fredryk, John [fredryk.john@epa.gov]; HORTON JOHN [HORTON.JOHN@mahindra.com]; FAHY JAMES [FAHY.JAMES@mahindra.com]
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Dear David Swain,

I hope you have enjoyed a wonderful Thanksgiving.

I would like to inform that our Logistics department has booked to pick up the vehicle most likely today with delivery tomorrow, but with the weather situation it could possibly be Wed AM at the latest for delivery.
They have gave the carrier John Fredryk's info for delivery as stated in the "Test Order #18-ATV-PE-68" notification letter.

I will send you an electronic version of the service manual in a separate email.

Thanks and kind regards,

Henrique R. Martins

Sr Manager
Technical and Regulatory Affairs
Certification, Homologation, and Compliance
Mahindra Automotive North American Technical Center
275 Rex Blvd
Auburn Hills, MI 48326
(248) 268-6600

From: Swain, David <swain.david@epa.gov>
Sent: Wednesday, November 21, 2018 4:15 PM
To: MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Cc: Green, Donzell <green.donzell@epa.gov>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Do you also have the service manual in electronic format?

From: MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Sent: Wednesday, November 21, 2018 4:12 PM
To: Swain, David <swain.david@epa.gov>
Cc: Green, Donzell <green.donzell@epa.gov>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Dear David,
As requested, please find attached an electronic version of the Operators Guide containing Maintenance Procedures.
I have issue a request to my logistic department to ship the vehicle from [redacted] to the EPA lab, I will let you know as soon as I receive confirmation of the shipment date.

Ex. 4 CBI

Thanks and kind regards,

Henrique R. Martins

Sr Manager
Technical and Regulatory Affairs
Certification, Homologation, and Compliance
Mahindra Automotive North American Technical Center
275 Rex Blvd
Auburn Hills, MI 48326
(248) 268-6600

From: Swain, David <swain.david@epa.gov>
Sent: Wednesday, November 21, 2018 12:40 PM
To: MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Cc: Green, Donzell <green.donzell@epa.gov>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Also, do you have an electronic version of the service manual that you can mail Donzell and me?

Thank !
-Dave

From: MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Sent: Tuesday, November 20, 2018 3:37 PM
To: Swain, David <swain.david@epa.gov>
Cc: Green, Donzell <green.donzell@epa.gov>; FAHY JAMES <FAHY.JAMES@mahindra.com>; HORTON JOHN <HORTON.JOHN@mahindra.com>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Dear David,
Find attached the driver's trace for the test performed at Ex. 4 CBI earlier this year.

Please let us know a date that is convenient to ship the vehicle to the EPA laboratory.

Thanks and kind regards,

Henrique R. Martins

Sr Manager
Technical and Regulatory Affairs
Certification, Homologation, and Compliance
Mahindra Automotive North American Technical Center
275 Rex Blvd
Auburn Hills, MI 48326
(248) 268-6600

From: Swain, David <swain.david@epa.gov>
Sent: Monday, November 19, 2018 7:01 PM
To: HORTON JOHN <HORTON.JOHN@mahindra.com>; MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Cc: Green, Donzell <green.donzell@epa.gov>; FAHY JAMES <FAHY.JAMES@mahindra.com>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Thank-you ! Do you have the driver's trace too?

From: HORTON JOHN <HORTON.JOHN@mahindra.com>
Sent: Friday, November 16, 2018 7:15 PM
To: Swain, David <swain.david@epa.gov>; MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Cc: Green, Donzell <green.donzell@epa.gov>; FAHY JAMES <FAHY.JAMES@mahindra.com>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

David,

Per your request.
These results were from a development test at another facility Ex. 4 CBI earlier this year.

Total Result (weighted)

	Weighted THC[g/mile]	CO[g/mile]	CO_2[g/mile]	NO_x[g/mile]	CH_4[g/mile]	N_2O[g/mile]	NMHC[g/mile]	HC+NO_x[g/mile]	***Fuel Economy***
Mass per Dist.	Ex. 4 CBI								
Mass per Dist. (rounded)									
Mass per Dist. (rounded) per km									

Particulate Result

	Bag 1	Bag 2	Bag 3	Bag 4
Filter ID	Ex. 4 CBI			
Particulate Sample Mass				
Mass Corr Factor				
Mass of Particulate Emission				
Specific Particulate Emission (BG Corr) g/mile				

Weighted Specific Particulate Emissions g

Ex. 4 CBI

From: Swain, David <swain.david@epa.gov>
Sent: Friday, November 16, 2018 6:49 PM
To: HORTON JOHN <HORTON.JOHN@mahindra.com>; MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Cc: Green, Donzell <green.donzell@epa.gov>; FAHY JAMES <FAHY.JAMES@mahindra.com>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Thank-you Mr. Horton,
Is it possible you and/or Henrique can please share the PM data again?
I can't locate it.

Thanks,
-Dave Swain

From: HORTON JOHN <HORTON.JOHN@mahindra.com>
Sent: Friday, November 16, 2018 7:41 AM
To: Swain, David <swain.david@epa.gov>; MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Cc: Green, Donzell <green.donzell@epa.gov>; FAHY JAMES <FAHY.JAMES@mahindra.com>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

David,

Henrique is on vacation so I will answer in his stead.

Ex. 4 CBI

The vehicle is ready to ship.

Regards,

John Horton
Sr. Emissions Compliance Engineer
Office of Technical and Regulatory Affairs
Mahindra North American Technical Center
275 Rex Blvd Auburn Hills, MI 48326, USA
Email: horton.john@mahindra.com
Ex. 6 Personal Privacy (PP)
Mahindra
Rise.

From: Swain, David <swain.david@epa.gov>
Sent: Thursday, November 15, 2018 6:22 PM
To: MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Cc: Green, Donzell <green.donzell@epa.gov>; HORTON JOHN <HORTON.JOHN@mahindra.com>; FAHY JAMES <FAHY.JAMES@mahindra.com>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Thank-you Henrique.
I did not ask for you to test it, but I was very interested in any results you have. Rather than make an estimate for which of our test cells is most appropriate to use to test it, your results will help guide me, so I appreciate it.

Also, did you take any particulate measurements or N2O measurements?

We are nearly ready to receive it. I will know more Monday, if it is ok to ship.

Thank-you,
-David Swain

From: MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Sent: Wednesday, November 14, 2018 2:26 PM
To: Swain, David <swain.david@epa.gov>
Cc: Green, Donzell <green.donzell@epa.gov>; HORTON JOHN <HORTON.JOHN@mahindra.com>; FAHY JAMES <FAHY.JAMES@mahindra.com>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Dear David,
As per your request, Ex. 4 CBI to performed Emissions testing yesterday. The test was executed by Ex. 4 CBI without the presence of MNATC, Inc. personnel.
The results are compliant and consistent with other testing (please find the testing results attached to this email).
The vehicle custody form needs to be updated to reflect this additional activity (the emissions testing), please let me know if I can send you the updated form by email.
Please let me also know a date that is convenient to ship the vehicle to the EPA laboratory.

Thanks and kind regards,

Henrique R. Martins

Sr Manager
Technical and Regulatory Affairs
Certification, Homologation, and Compliance
Mahindra Automotive North American Technical Center
275 Rex Blvd
Auburn Hills, MI 48326
(248) 268-6600

From: MARTINS HENRIQUE
Sent: Friday, November 9, 2018 4:06 PM
To: Swain, David <swain.david@epa.gov>
Cc: Green, Donzell <green.donzell@epa.gov>; HORTON JOHN <HORTON.JOHN@mahindra.com>; FAHY JAMES <FAHY.JAMES@mahindra.com>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Dear David,
Thank you for the quick response.
I will contact Ex. 4 CBI and inquire about their availability and then inform you whether we will need extension on the required delivery date.

Thanks and kind regards,

Henrique R. Martins

Sr Manager
Technical and Regulatory Affairs
Certification, Homologation, and Compliance
Mahindra Automotive North American Technical Center
275 Rex Blvd
Auburn Hills, MI 48326
(248) 268-6600

From: Swain, David <swain.david@epa.gov>
Sent: Friday, November 9, 2018 4:01 PM
To: MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Cc: Green, Donzell <green.donzell@epa.gov>; HORTON JOHN <HORTON.JOHN@mahindra.com>; FAHY JAMES <FAHY.JAMES@mahindra.com>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Hi Henrique,
I am interested in comparing your results with ours, because we do not normally test vehicles that do not have traps. But if Ex. 4 CBI does not have available testing within the next week, I understand. Upon request, we can extend any required delivery date if the reason is that you need to wait for a testing slot to become available.

-Dave

From: MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Sent: Friday, November 09, 2018 3:54 PM
To: Swain, David <swain.david@epa.gov>
Cc: Green, Donzell <green.donzell@epa.gov>; HORTON JOHN <HORTON.JOHN@mahindra.com>; FAHY JAMES <FAHY.JAMES@mahindra.com>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Dear David,
We have only requested Ex. 4 CBI to carry-out service accumulation as instructed in the Test Order 18-ATVB-PE-68.
Please inform us if EPA wants any additional preparations that were not listed in the Test Order 18-ATVB-PE-68 to be performed prior to delivery.
Also, please let us know a date that is more convenient for EPA for the shipment.

Meanwhile I will communicate our logistics team to cancel the shipment on Nov 12, 2018 and wait for your direction.

Thanks and kind regards,
Henrique R. Martins

Sr Manager
Technical and Regulatory Affairs
Certification, Homologation, and Compliance
Mahindra Automotive North American Technical Center
275 Rex Blvd
Auburn Hills, MI 48326
(248) 268-6600

From: Swain, David <swain.david@epa.gov>
Sent: Friday, November 9, 2018 2:25 PM
To: MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Cc: Green, Donzell <green.donzell@epa.gov>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Please do not ship it yet.
Have you tested it?

From: MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Sent: Friday, November 09, 2018 11:37 AM
To: Swain, David <swain.david@epa.gov>
Cc: Green, Donzell <green.donzell@epa.gov>; Hoban, John <Hoban.John@epa.gov>; HORTON JOHN <HORTON.JOHN@mahindra.com>; FAHY JAMES <FAHY.JAMES@mahindra.com>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Dear David,
This email is to inform you that the Service Accumulation is now complete.
I went to Ex. 4 CBI yesterday to review and sign the forms listed in attachments 1,2 and 3 of the Test Order letter sent by EPA.
A binder containing all the forms (as all as other required documents like Operator's Guide) in inside the storage compartment located under the driver seat.
The storage compartment is locked (keys are on the same key holder as the ignition keys) and the binder is wrapped in a plastic bag.

We are taking care of the arrangements to ship the vehicle to the EPA test laboratory. Shipment is planned for Nov 12, 2018.
Our shipping request has the contact information supplied in the Test Order letter sent by EPA.
Please let me know if this date is convenient to EPA or if you would suggest another date.
Also, please let us know should you have additional instructions for the delivery.

I will fill attachment 4 with the list of representatives to witness the test vehicle set-up as soon as EPA confirms the test date.

Thanks and kind regards,

Henrique R. Martins

Sr Manager
Technical and Regulatory Affairs
Certification, Homologation, and Compliance
Mahindra Automotive North American Technical Center
275 Rex Blvd
Auburn Hills, MI 48326
(248) 268-6600

From: MARTINS HENRIQUE
Sent: Friday, November 2, 2018 3:22 PM
To: 'Swain, David' <swain.david@epa.gov>
Cc: 'Green, Donzell' <green.donzell@epa.gov>; 'Hoban, John' <Hoban.John@epa.gov>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Dear David,

So far, based on the information we have from Ex. 4 CBI, we do not believe we will need extension on the test order. When the vehicle is ready to ship from Ex. 4 CBI we will notify you (and cc Donzell Green and John Hoban as per your request).

Thanks and kind regards,

Henrique R. Martins

Sr Manager
Technical and Regulatory Affairs

Certification, Homologation, and Compliance
Mahindra Automotive North American Technical Center
275 Rex Blvd
Auburn Hills, MI 48326
(248) 268-6600

From: Swain, David <swain.david@epa.gov>
Sent: Friday, November 2, 2018 11:03 AM
To: MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Cc: Ex. 4 CBI HORTON JOHN <HORTON.JOHN@mahindra.com>; FAHY JAMES <FAHY.JAMES@mahindra.com>; Green, Donzell <green.donzell@epa.gov>; Hoban, John <Hoban.John@epa.gov>; Chen, Emily <Chen.Emily@epa.gov>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Mr. Martins,
If Mahindra would like EPA to extend the test order delivery date to NVFEL, we can do this informally via email. Please email me the request, and please make sure to keep Donzell Green and John Hoban in the cc.

Please do not contact John Hoban. Please only keep him in the cc of all correspondence until further notice.

Thank-you,
-David Swain

From: MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Sent: Friday, November 02, 2018 10:34 AM
To: Swain, David <swain.david@epa.gov>; Green, Donzell <green.donzell@epa.gov>; Jackson, Cleophas <jackson.cleophas@epa.gov>
Cc: Ex. 4 CBI HORTON JOHN <HORTON.JOHN@mahindra.com>; FAHY JAMES <FAHY.JAMES@mahindra.com>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Dear David,

Based on an email we recently received from Ex. 4 CBI s planning on maintenance of their Emissions benches until November 12, 2018 (Ex. 4 CBI , could you please confirm?).
Please let us know your decision regarding the test location and we will make sure to supply the vehicle at the date and place required by EPA.

Thanks and kind regards,

Henrique R. Martins

Sr Manager
Technical and Regulatory Affairs
Certification, Homologation, and Compliance
Mahindra Automotive North American Technical Center
275 Rex Blvd
Auburn Hills, MI 48326
(248) 268-6600

From: Swain, David <swain.david@epa.gov>
Sent: Thursday, November 1, 2018 12:25 PM
To: MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Cc: Ex. 4 CBI Green, Donzell <green.donzell@epa.gov>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Mr. Martins,
Please reply-all. Will Ex. 4 CBI e able to perform an emissions test?
Thank-you,
-David Swain

From: MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Sent: Wednesday, October 31, 2018 10:52 AM
To: Jackson, Cleophas <jackson.cleophas@epa.gov>; Swain, David <swain.david@epa.gov>; Green, Donzell <green.donzell@epa.gov>

Cc: HORTON JOHN <HORTON.JOHN@mahindra.com>; FAHY JAMES <FAHY.JAMES@mahindra.com>
Subject: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Dear All,

This note is to inform you that the ROXOR vehicle selected by EPA for Compliance testing was shipped to Ex. 4 CBI yesterday. According to Ex. 4 CBI personnel, service accumulation will be initiated today and should be completed by sometime tomorrow.

The contacts of the Ex. 4 CBI personnel managing the service accumulation are:

- Ex. 4 CBI
- Ex. 4 CBI

Please let me know the date the test will be scheduled and confirm the test location, so I can fill out the "Statement of Manufacturer Intent to Witness Test Vehicle Set-up" form.
Also, I wanted to let you know the communication I received regarding this test order (Test Order 18-ATVB-PE-68) only contains attachment 1, 3 and 4.
Please let me know in case you also require attachment 2 to be filled and submitted.
Finally, please send me the document you referred during our meeting as "Blue Sheet" so I can fill it out and submit to you.

Thanks and kind regards,

Henrique R. Martins

Sr Manager
Technical and Regulatory Affairs
Certification, Homologation, and Compliance
Mahindra Automotive North American Technical Center
275 Rex Blvd
Auburn Hills, MI 48326
(248) 268-6600

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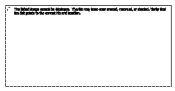

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----

Message

From: MARTINS HENRIQUE [MARTINS.HENRIQUE@mahindra.com]
Sent: 2/18/2019 9:54:06 PM
To: Swain, David [swain.david@epa.gov]
Subject: RE: Left-hand steering
Attachments: ATT00001.txt

Dear David Swain,

I am sending this email to follow up on your question inquiring if left-hand steering vehicles can be registered in India as on-road vehicles.

No LHD vehicle can be registered in India. They are only allowed for the purpose of research and testing (see example in the image below) and the importer must ensure that these vehicles are kept off the road and not registered under the Central Motor Vehicle Rules (CMVR), 1989.

We have confirmed this information with our colleagues in India.

Please let me know if you have any further questions, I would be happy to assist.

Thank you and kind regards,

Henrique R. Martins

Sr Manager
Technical and Regulatory Affairs
Certification, Homologation, and Compliance
Mahindra Automotive North American Technical Center
275 Rex Blvd
Auburn Hills, MI 48326
(248) 268-6600

From: Swain, David <swain.david@epa.gov>
Sent: Thursday, February 14, 2019 4:32 PM

To: MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Subject: Left-hand steering

Mr. Martins,
Can you please confirm whether left-hand steering vehicles can be registered in India as on-road vehicles?

Thank-you,
-David Swain

(734)214-4377
~~~~~~
| U.S. Environmental Protection Agency |
| Compliance Division |
| Project engineer |
| 2000 Traverwood Drive |
| Ann Arbor, MI 48105 |
~~~~~~

Please consider the environment before printing this email.

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Message

From: MARTINS HENRIQUE [MARTINS.HENRIQUE@mahindra.com]
Sent: 12/6/2018 7:51:02 PM
To: Swain, David [swain.david@epa.gov]; Green, Donzell [green.donzell@epa.gov]
CC: Hoban, John [Hoban.John@epa.gov]; Ex. 6 Personal Privacy (PP)
Subject: RE: Recreational Vehicle Production Test Order 18-ATVB-PE-68-Mahindra Automotive North American Technical Center Inc. -EF-LMNCX2.52DMI-KMNCX2.52DMI
Attachments: ATT00001.txt; 11292018 Copy of RV Test Vehicle Information Form _JMNCX2.52DM1_02.xlsx

Dear David,
As requested, please find attached to this email the blue sheet excel file.

Thanks and kind regards,

Henrique R. Martins

Sr Manager
Technical and Regulatory Affairs
Certification, Homologation, and Compliance
Mahindra Automotive North American Technical Center
275 Rex Blvd
Auburn Hills, MI 48326
(248) 268-6600

From: Swain, David <swain.david@epa.gov>
Sent: Thursday, December 6, 2018 9:33 AM
To: Green, Donzell <green.donzell@epa.gov>
Cc: MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>; Hoban, John <Hoban.John@epa.gov>;
Ex. 6 Personal Privacy (PP)
Subject: RE: Recreational Vehicle Production Test Order 18-ATVB-PE-68-Mahindra Automotive North American Technical Center Inc. -EF-LMNCX2.52DMI-KMNCX2.52DMI

Hi Henrique,
Please reply-all with a filled-out blue sheet today ASAP.
Thank-you,
-David Swain

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Message

From: MARTINS HENRIQUE [MARTINS.HENRIQUE@mahindra.com]
Sent: 11/21/2018 9:11:31 PM
To: Swain, David [swain.david@epa.gov]
CC: Green, Donzell [green.donzell@epa.gov]
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019
Attachments: ATT00001.txt; ROXOR 2018MY Operator's Guide_V02.pdf

Dear David,
As requested, please find attached an electronic version of the Operators Guide containing Maintenance Procedures. I have issue a request to my logistic department to ship the vehicle from Ex. 4 CBI to the EPA lab, I will let you know as soon as I receive confirmation of the shipment date.

Thanks and kind regards,

Henrique R. Martins

Sr Manager
Technical and Regulatory Affairs
Certification, Homologation, and Compliance
Mahindra Automotive North American Technical Center
275 Rex Blvd
Auburn Hills, MI 48326
(248) 268-6600

From: Swain, David <swain.david@epa.gov>
Sent: Wednesday, November 21, 2018 12:40 PM
To: MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Cc: Green, Donzell <green.donzell@epa.gov>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Also, do you have an electronic version of the service manual that you can mail Donzell and me?

Thank !
-Dave

From: MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Sent: Tuesday, November 20, 2018 3:37 PM
To: Swain, David <swain.david@epa.gov>
Cc: Green, Donzell <green.donzell@epa.gov>; FAHY JAMES <FAHY.JAMES@mahindra.com>; HORTON JOHN <HORTON.JOHN@mahindra.com>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Dear David,
Find attached the driver's trace for the test performed at Ex. 4 CBI earlier this year.

Please let us know a date that is convenient to ship the vehicle to the EPA laboratory.

Thanks and kind regards,

Henrique R. Martins

Sr Manager
Technical and Regulatory Affairs
Certification, Homologation, and Compliance
Mahindra Automotive North American Technical Center
275 Rex Blvd
Auburn Hills, MI 48326
(248) 268-6600

From: Swain, David <swain.david@epa.gov>
Sent: Monday, November 19, 2018 7:01 PM
To: HORTON JOHN <HORTON.JOHN@mahindra.com>; MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Cc: Green, Donzell <green.donzell@epa.gov>; FAHY JAMES <FAHY.JAMES@mahindra.com>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Thank-you ! Do you have the driver's trace too?

From: HORTON JOHN <HORTON.JOHN@mahindra.com>
Sent: Friday, November 16, 2018 7:15 PM
To: Swain, David <swain.david@epa.gov>; MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Cc: Green, Donzell <green.donzell@epa.gov>; FAHY JAMES <FAHY.JAMES@mahindra.com>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

David,

Per your request.
These results were from a development test at another facility Ex. 4 CBI earlier this year.

Total Result (weighted)

Weighted	THC[g/mile]	CO[g/mile]	CO_2[g/mile]	NO_x[g/mile]	CH_4[g/mile]	N_2O[g/mile]	NMHC[g/mile]	HC+NO_x[g/mile]	***Fuel E***
Mass per Dist.									mile/ga
Mass per Dist. (rounded									Km/L
Mass per Dist. (rounded per km									

Ex. 4 CBI

Particulate Result

	Bag 1	Bag 2	Bag 3	Bag 4
Filter ID	Ex. 4 CBI			
Particulate				
Sample				
Mass				
Mass Corr Factor				
Mass of Particulate Emission				
Specific Particulate Emission (BG Corr)				
Weighted Specific Particulate Emissions				

From: Swain, David <swain.david@epa.gov>
Sent: Friday, November 16, 2018 6:49 PM
To: HORTON JOHN <HORTON.JOHN@mahindra.com>; MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Cc: Green, Donzell <green.donzell@epa.gov>; FAHY JAMES <FAHY.JAMES@mahindra.com>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Thank-you Mr. Horton,
Is it possible you and/or Henrique can please share the PM data again?
I can't locate it.

Thanks,
-Dave Swain

From: HORTON JOHN <HORTON.JOHN@mahindra.com>
Sent: Friday, November 16, 2018 7:41 AM
To: Swain, David <swain.david@epa.gov>; MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Cc: Green, Donzell <green.donzell@epa.gov>; FAHY JAMES <FAHY.JAMES@mahindra.com>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

David,

Henrique is on vacation so I will answer in his stead.

Ex. 4 CBI

Ex. 4 CBI

The vehicle is ready to ship.

Regards,

John Horton
Sr. Emissions Compliance Engineer
Office of Technical and Regulatory Affairs
Mahindra North American Technical Center
275 Rex Blvd Auburn Hills, MI 48326, USA
Email: horton.john@mahindra.com
Ex. 6 Personal Privacy (PP)
mahindra
Rise.

From: Swain, David <swain.david@epa.gov>
Sent: Thursday, November 15, 2018 6:22 PM
To: MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Cc: Green, Donzell <green.donzell@epa.gov>; HORTON JOHN <HORTON.JOHN@mahindra.com>; FAHY JAMES <FAHY.JAMES@mahindra.com>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Thank-you Henrique.
I did not ask for you to test it, but I was very interested in any results you have. Rather than make an estimate for which of our test cells is most appropriate to use to test it, your results will help guide me, so I appreciate it.

Also, did you take any particulate measurements or N2O measurements?

We are nearly ready to receive it. I will know more Monday, if it is ok to ship.

Thank-you,
-David Swain

From: MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Sent: Wednesday, November 14, 2018 2:26 PM
To: Swain, David <swain.david@epa.gov>
Cc: Green, Donzell <green.donzell@epa.gov>; HORTON JOHN <HORTON.JOHN@mahindra.com>; FAHY JAMES <FAHY.JAMES@mahindra.com>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Dear David,
As per your request Ex. 4 CBI performed Emissions testing yesterday. The test was executed b Ex. 4 CBI ithout the presence of MNATC, Inc. personnel.

The results are compliant and consistent with other testing (please find the testing results attached to this email).
The vehicle custody form needs to be updated to reflect this additional activity (the emissions testing), please let me know if I can send you the updated form by email.
Please let me also know a date that is convenient to ship the vehicle to the EPA laboratory.

Thanks and kind regards,

Henrique R. Martins

Sr Manager
Technical and Regulatory Affairs
Certification, Homologation, and Compliance
Mahindra Automotive North American Technical Center
275 Rex Blvd
Auburn Hills, MI 48326
(248) 268-6600

From: MARTINS HENRIQUE
Sent: Friday, November 9, 2018 4:06 PM
To: Swain, David <swain.david@epa.gov>
Cc: Green, Donzell <green.donzell@epa.gov>; HORTON JOHN <HORTON.JOHN@mahindra.com>; FAHY JAMES <FAHY.JAMES@mahindra.com>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Dear David,
Thank you for the quick response.
I will contact Ex. 4 CBI and inquire about their availability and then inform you whether we will need extension on the required delivery date.

Thanks and kind regards,

Henrique R. Martins

Sr Manager
Technical and Regulatory Affairs
Certification, Homologation, and Compliance
Mahindra Automotive North American Technical Center
275 Rex Blvd
Auburn Hills, MI 48326
(248) 268-6600

From: Swain, David <swain.david@epa.gov>
Sent: Friday, November 9, 2018 4:01 PM
To: MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Cc: Green, Donzell <green.donzell@epa.gov>; HORTON JOHN <HORTON.JOHN@mahindra.com>; FAHY JAMES <FAHY.JAMES@mahindra.com>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Hi Henrique,
I am interested in comparing your results with ours, because we do not normally test vehicles that do not have traps. But if Ex. 4 CBI does not have available testing within the next week, I understand. Upon request, we can extend any required delivery date if the reason is that you need to wait for a testing slot to become available.

-Dave

From: MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Sent: Friday, November 09, 2018 3:54 PM
To: Swain, David <swain.david@epa.gov>
Cc: Green, Donzell <green.donzell@epa.gov>; HORTON JOHN <HORTON.JOHN@mahindra.com>; FAHY JAMES <FAHY.JAMES@mahindra.com>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Dear David,
We have only requested Ex. 4 CBI to carry-out service accumulation as instructed in the Test Order 18-ATVB-PE-68.
Please inform us if EPA wants any additional preparations that were not listed in the Test Order 18-ATVB-PE-68 to be performed prior to delivery.
Also, please let us know a date that is more convenient for EPA for the shipment.

Meanwhile I will communicate our logistics team to cancel the shipment on Nov 12, 2018 and wait for your direction.

Thanks and kind regards,

Henrique R. Martins

Sr Manager
Technical and Regulatory Affairs
Certification, Homologation, and Compliance
Mahindra Automotive North American Technical Center
275 Rex Blvd
Auburn Hills, MI 48326
(248) 268-6600

From: Swain, David <swain.david@epa.gov>
Sent: Friday, November 9, 2018 2:25 PM
To: MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Cc: Green, Donzell <green.donzell@epa.gov>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Please do not ship it yet.
Have you tested it?

From: MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Sent: Friday, November 09, 2018 11:37 AM
To: Swain, David <swain.david@epa.gov>
Cc: Green, Donzell <green.donzell@epa.gov>; Hoban, John <Hoban.John@epa.gov>; HORTON JOHN <HORTON.JOHN@mahindra.com>; FAHY JAMES <FAHY.JAMES@mahindra.com>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Dear David,
This email is to inform you that the Service Accumulation is now complete.
I went to Ex. 4 CBI yesterday to review and sign the forms listed in attachments 1,2 and 3 of the Test Order letter sent by EPA.
A binder containing all the forms (as all as other required documents like Operator's Guide) in inside the storage compartment located under the driver seat.
The storage compartment is locked (keys are on the same key holder as the ignition keys) and the binder is wrapped in a plastic bag.

We are taking care of the arrangements to ship the vehicle to the EPA test laboratory. Shipment is planned for Nov 12, 2018.
Our shipping request has the contact information supplied in the Test Order letter sent by EPA.
Please let me know if this date is convenient to EPA or if you would suggest another date.
Also, please let us know should you have additional instructions for the delivery.

I will fill attachment 4 with the list of representatives to witness the test vehicle set-up as soon as EPA confirms the test date.

Thanks and kind regards,

Henrique R. Martins

Sr Manager
Technical and Regulatory Affairs
Certification, Homologation, and Compliance
Mahindra Automotive North American Technical Center
275 Rex Blvd
Auburn Hills, MI 48326
(248) 268-6600

From: MARTINS HENRIQUE
Sent: Friday, November 2, 2018 3:22 PM
To: 'Swain, David' <swain.david@epa.gov>
Cc: 'Green, Donzell' <green.donzell@epa.gov>; 'Hoban, John' <Hoban.John@epa.gov>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Dear David,

So far, based on the information we have from Ex. 4 CBI we do not believe we will need extension on the test order.
When the vehicle is ready to ship from Ex. 4 CBI we will notify you (and cc Donzell Green and John Hoban as per your request).

Thanks and kind regards,

Henrique R. Martins

Sr Manager
Technical and Regulatory Affairs
Certification, Homologation, and Compliance
Mahindra Automotive North American Technical Center
275 Rex Blvd
Auburn Hills, MI 48326

(248) 268-6600

From: Swain, David <swain.david@epa.gov>
Sent: Friday, November 2, 2018 11:03 AM
To: MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Cc: Ex. 4 CBI HORTON JOHN <HORTON.JOHN@mahindra.com>; FAHY JAMES <FAHY.JAMES@mahindra.com>; Green, Donzell <green.donzell@epa.gov>; Hoban, John <Hoban.John@epa.gov>; Chen, Emily <Chen.Emily@epa.gov>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Mr. Martins,
If Mahindra would like EPA to extend the test order delivery date to NVFEL, we can do this informally via email. Please email me the request, and please make sure to keep Donzell Green and John Hoban in the cc.

Please do not contact John Hoban. Please only keep him in the cc of all correspondence until further notice.

Thank-you,
-David Swain

From: MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Sent: Friday, November 02, 2018 10:34 AM
To: Swain, David <swain.david@epa.gov>; Green, Donzell <green.donzell@epa.gov>; Jackson, Cleophas <jackson.cleophas@epa.gov>
Cc: Ex. 4 CBI HORTON JOHN <HORTON.JOHN@mahindra.com>; FAHY JAMES <FAHY.JAMES@mahindra.com>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Dear David,
Based on an email we recently received from Ex. 4 CBI is planning on maintenance of their Emissions benches until November 12, 2018 (Ex. 4 CBI , could you please confirm?).
Please let us know your decision regarding the test location and we will make sure to supply the vehicle at the date and place required by EPA.

Thanks and kind regards,

Henrique R. Martins

Sr Manager
Technical and Regulatory Affairs
Certification, Homologation, and Compliance
Mahindra Automotive North American Technical Center
275 Rex Blvd
Auburn Hills, MI 48326
(248) 268-6600

From: Swain, David <swain.david@epa.gov>
Sent: Thursday, November 1, 2018 12:25 PM

To: MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Cc: Ex. 4 CBI Green, Donzell <green.donzell@epa.gov>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Mr. Martins,
Please reply-all. Will Ex. 4 CBI able to perform an emissions test?
Thank-you,
-David Swain

From: MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Sent: Wednesday, October 31, 2018 10:52 AM
To: Jackson, Cleophas <jackson.cleophas@epa.gov>; Swain, David <swain.david@epa.gov>; Green, Donzell <green.donzell@epa.gov>
Cc: HORTON JOHN <HORTON.JOHN@mahindra.com>; FAHY JAMES <FAHY.JAMES@mahindra.com>
Subject: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Dear All,

This note is to inform you that the ROXOR vehicle selected by EPA for Compliance testing was shipped to Ex. 4 CBI yesterday. According to Ex. 4 CBI personnel, service accumulation will be initiated today and should be completed by sometime tomorrow.

The contacts of the Ex. 4 CBI personnel managing the service accumulation are:

Ex. 4 CBI

Please let me know the date the test will be scheduled and confirm the test location, so I can fill out the "Statement of Manufacturer Intent to Witness Test Vehicle Set-up" form.
Also, I wanted to let you know the communication I received regarding this test order (Test Order 18-ATVB-PE-68) only contains attachment 1, 3 and 4.
Please let me know in case you also require attachment 2 to be filled and submitted.
Finally, please send me the document you referred during our meeting as "Blue Sheet" so I can fill it out and submit to you.

Thanks and kind regards,

Henrique R. Martins

Sr Manager
Technical and Regulatory Affairs
Certification, Homologation, and Compliance
Mahindra Automotive North American Technical Center
275 Rex Blvd

Auburn Hills, MI 48326
(248) 268-6600

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----

MAHINDRA

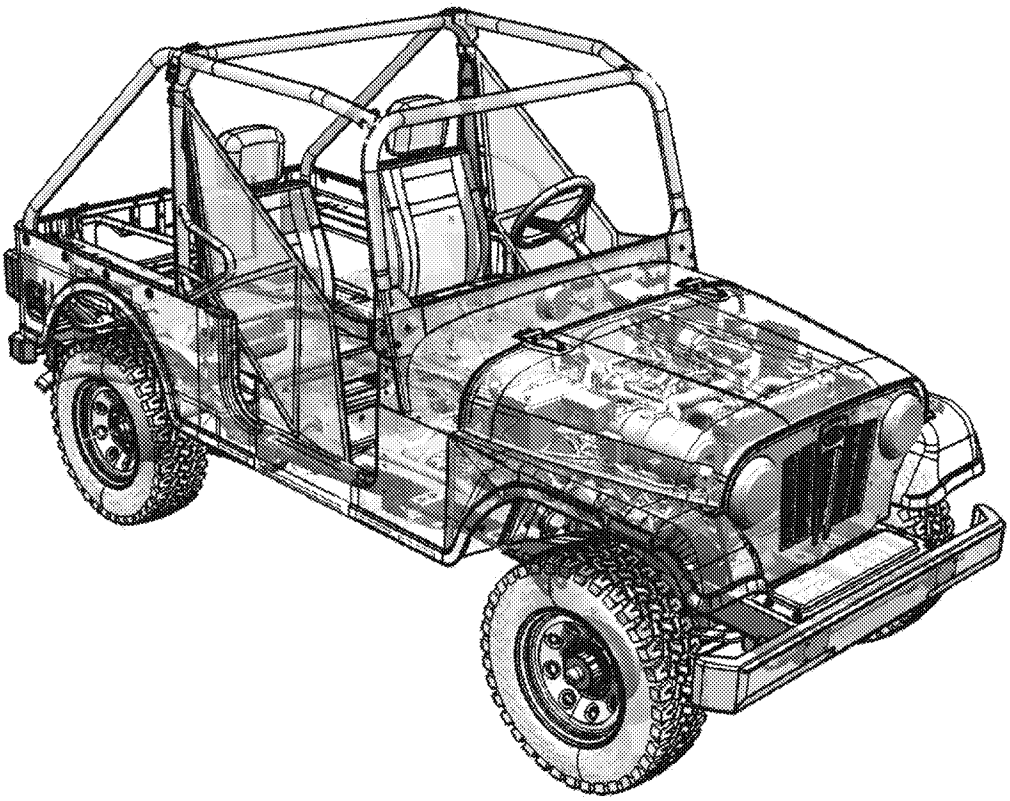
ROXOR

OFF ROAD

MISSION:READY

NOTE: Please keep and store this Operator's Guide with your ROXOR Offroad Side x Side and read and understand its contents. Make sure anyone you allow to operate the ROXOR Offroad Side x Side also reads and comprehends the contents of this Operator's Guide.

OPERATOR'S GUIDE



CONTENTS

1 Introduction 1

2 Getting Started 2

3 Operator's Guide 3

4 Safety Alert Symbols 4

5 Safety Information/General Precautions 5
- 5.1 Avoid Carbon Monoxide Poisoning 5
- 5.2 Avoid Diesel Fuel Hazards 5
- 5.3 Avoid Hot Part Hazards 6
- 5.4 Accessories and Modifications 6

6 Safe Operations and Responsibilities 7
- 6.1 Owner Responsibilities 7
- 6.2 Operator's Responsibilities 7
- 6.3 Passenger Responsibilities 8
- 6.4 Occupant Restraint System 8
- 6.5 Riding Carefully 8
- 6.6 Terrain Condition 9
- 6.7 Stopping the Engine and Parking 10

7 Important On-Product Labels 11
- 7.1 ANSI/ROHVA Labels 11
- 7.2 EPA Labels 15
- 7.3 Manufacturer Labels 17

8 Riding Gear 20
- 8.1 Helmets and Eye Protection 20
- 8.2 Additional Riding Gear 21

9 Prepare to Ride 22
- 9.1 Pre-Ride Inspection Checklist 22
- 9.2 Post-Ride Inspection Checklist 24

10 Learning Your Vehicle 25

11 Vehicle Controls 27
- 11.1 Primary Controls 27
- 11.2 Keys 27
- 11.3 Ignition Switch 27
- 11.4 Headlamp Switch 28
- 11.5 Multifunction Gauge 28
- 11.6 Steering Wheel 30
- 11.7 Accelerator Pedal 30
- 11.8 Brake Pedal 30
- 11.9 Clutch Pedal 30
- 11.10 Gear Shift Lever 31
- 11.11 Transfer Case Lever 31

12 Equipment 32
- 12.1 Seat Belts 32
- 12.2 Driver's Seat 32
- 12.3 Passenger Seat 32
- 12.4 Rollover Protective Structure (ROPS) 33
- 12.5 Shoulder Guards 33

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12.6 Side Nets 33
12.7 Passenger Handhold 33
12.8 12 Volt Power Outlet 33
12.9 Storage Compartments 33
12.10 Cup Holders 34
12.11 Rear Cargo Area 34
12.12 Tailgate 34
12.13 Fuel Reservoir Cap 34

13 Electrical Distribution 35

14 Fuel (Diesel) 38
14.1 Fuel Requirements 38
14.2 Fueling Procedure 38

15 Break in Period 39
15.1 Operation During Break In 39
15.2 Tips for Maximizing Durability 39

16 Avoiding Accidents 40

17 Off-Road Operation 41

18 General Driving Techniques 42
18.1 Driving Tips 42
18.2 Driving in Reverse 42
18.3 Driving in or on Slippery Surfaces 42
18.4 Driving in or on Sand 43
18.5 Driving in or on Snow or Ice 43
18.6 Driving on Hills and Slopes 43
18.7 Side Hilling 44
18.8 Drop Offs 44
18.9 Crossing Obstacles 44
18.10 Crossing Shallow Water 44
18.11 Crossing Public Streets, Roads, or Highways 45
18.12 Driving on Pavement 45
18.13 Group and Distance Riding 45
18.14 Environment 46

19 Moving Loads and Doing Work 47
19.1 Working with Your ROXOR 47
19.2 Weight & Load Limits 47
19.3 Loading the Rear Cargo Area 47
19.4 Carrying Loads 47
19.5 Hauling and Pulling Loads 48

20 Transporting 49

21 Lifting and Supporting 50

22 Maintenance 51
22.1 Severe Dusty Conditions 51
22.2 Scheduled Maintenance Chart 52

23 Maintenance Procedures 56
23.1 Maintenance Tips and Precautions 56
23.2 Aim Headlamps 56
23.3 Clean Spark Arrester 56

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23.4 Clean and Inspect Brakes 57
23.5 Check Brake Fluid Level & Leak Check 58
23.6 Check Differential Oil Levels & Leak Check 59
23.7 Check Engine Coolant Level & Leak Check 60
23.8 Check Engine Oil Level & Leak Check 61
23.9 Check Power Steering Oil Level & Leak Check 62
23.10 Check Tire Pressure 63
23.11 Check Transfer Case Oil Level & Leak Check 64
23.12 Drain Fuel/Water Separator 65
23.13 Lubricate Shift Linkage 66
23.14 Replace Alternator Drive Belt 67
23.15 Replace Power Steering Drive Belt 67
23.16 Replace Engine Air Filter 68
23.17 Replace Engine Oil and Oil Filter 70
23.18 Replace Transfer Case Oil 72
23.19 Rotate Wheels and Tires 73

24 Vehicle Care 74
24.1 Post Operation Care 74
24.2 Vehicle Cleaning and Protection 74
24.3 Metal and Rust Prevention 74
24.4 Storage and Preseason Preparation 74

25 Technical Information 75
25.1 Product Identification Number 75
25.2 Engine Identification Number 75
25.3 Evaporative Emission Control System 75
25.4 Noise Emission Control System 76
25.5 Acts Presumed to Constitute Tampering 76

26 Specifications 77
26.1 Fluid Specifications and Quantities 77
26.2 Vehicle Specifications 77

27 Troubleshooting 79

28 Limited and EPA Warranties U.S. and Canada 81
28.1 Limited Warranty U.S. and Canada 81
28.2 U.S. EPA Emission-Related Limited Warranty (Canada Excluded) 85
28.3 California Evaporative Emissions Control Warranty Statement 87

29 Contact Us 89

30 Privacy Information 90

31 Change of Address/Ownership 91

32 Stolen Units 92

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1 INTRODUCTION

Congratulations on the purchase of your new Mahindra ROXOR Offroad Side x Side. Please know that Mahindra Vehicle Sales and Service, Inc. backs this unit with limited and EPA warranties. A network of ROXOR authorized dealers are ready to provide the parts, accessories and services to support your needs.

Upon delivery, you were informed of these limited and EPA warranty coverages and signed the Pre-Delivery Checklist to ensure your new ROXOR was prepared to your entire satisfaction. Please make sure you have a copy of the Pre-Delivery Checklist and retain it for your records. If you have questions or need more information, please contact your ROXOR authorized dealer or visit our website WWW.ROXOROFFROAD.COM.

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Issued: March 2018

2 GETTING STARTED

Start by learning how to help reduce the risk of an accident affecting you, a passenger or bystanders. Read and make sure you fully comprehend and abide by the content of this Operator's Guide before you operate the Mahindra ROXOR Offroad Side x Side.

Also, read and become familiar with all safety labels on your ROXOR. Failure to follow all on-product safety label warnings, and the warnings contained in this Operator's Guide may result in severe injury or death of the operator, passenger and bystanders.

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3 OPERATOR'S GUIDE

This Operator's Guide has been prepared to familiarize the owner and any operator with the various controls, maintenance and safe operating instructions. It is essential for the proper use of the product.

The information contained in this Operator's Guide is correct at the time of publication. Mahindra, however, maintains a policy of continuous improvement of its products without imposing upon itself any obligation to install them on products previously manufactured. We reserve the right to change, modify, or cancel specifications, designs, features, and colors without notice or obligation. Some differences between the manufactured product and the descriptions and/or specifications may exist.

Keep this Operator's Guide with the vehicle so you and any other operator can refer to it for things such as maintenance, troubleshooting and instructing others. To view and/or print extra copies of the Operator's Guide, simply visit WWW.ROXOROFFROAD.COM.

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4 SAFETY ALERT SYMBOLS

This safety alert symbol ⚠ indicates a potential for injury hazard. The categories of safety and informational labels provided on the ROXOR and in this Operator's Guide are defined as follows:

⚠ DANGER *potential for an immediate hazard resulting in severe injury or death to occupants and/or the general public if not avoided.*

⚠ WARNING *potential for a hazardous condition exists that could result in severe injury or death of occupants and/or the general public if not avoided.*

⚠ CAUTION *potential for a non-immediate hazard presenting a lesser threat of injury, resulting in minor or moderate injuries to occupants and/or general public if not avoided.*

NOTICE *potential for a non-immediate hazard presenting a risk to property and/or equipment damage.*

The entire contents of this Operator's Guide should be treated as safety instructions. They should be scrupulously adhered to, and where specifically warranted, we have called out instructions with the symbols above. However, failure to use proper care and abide by the contents of this Operator's Guide, as well as the applicable laws and regulations in your area, could result in severe injury, including death.

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5 SAFETY INFORMATION/GENERAL PRECAUTIONS

5.1 Avoid Carbon Monoxide Poisoning

All engine exhaust contains a deadly gas known as carbon monoxide. Carbon monoxide is a colorless, odorless, tasteless gas that may exist even though you may not see or smell engine exhaust. Breathing carbon monoxide can result in headaches, dizziness, drowsiness, nausea, confusion and could eventually lead to death. Lethal levels of carbon monoxide can collect quickly and exist for long periods of time when not properly ventilated. Always run the ROXOR in a well ventilated or open area.

⚠ DANGER *If you have symptoms that you think could be a result of carbon monoxide poisoning, leave the area right away, and call or go to the emergency room. If you keep breathing carbon monoxide fumes, you may pass out and die.*

⚠ WARNING *Avoid running the engine in garages, carports or barns that do not have proper ventilation. Avoid running the engine anywhere that may allow exhaust gases to be drawn into a building through open doors, windows or vents resulting in the carbon monoxide poisoning of yourself or others.*

5.2 Avoid Diesel Fuel Hazards

Diesel fuel is widely regarded as safe to handle and store in its liquid form. However, diesel fuel in its vapor form can be dangerous, especially at temperatures above 100°F (38°C). The vaporization rate of diesel fuel increases as the temperature increases. In the presence of a vapor accelerant such as fan forced air or oxygen, the diesel fuel can begin to vaporize even faster. Help reduce the risk of diesel fuel hazards by following these instructions.

- Strictly adhere to the fueling instructions in section **14.2 Fueling Procedure**.
- Never start or operate the engine if the fuel cap is not properly installed.
- Use only an approved (yellow) diesel fuel container to store and transfer diesel fuel.

⚠ WARNING *All fuel handling must take place in a well-ventilated area. Avoid heat, flames and other sources of ignition, avoid inhalation of vapors and contact with skin and eyes, do not siphon diesel fuel by mouth, never fill a fuel container inside the ROXOR as the interior surfaces are coated, acting as an insulator and allowing static electricity to build up, help guard against static discharges by always filling approved containers on the ground, do not allow anyone to remain in the ROXOR while fueling, an occupant may not be able to leave the area quickly in an emergency, failure to follow these warnings may result in severe injury or death.*

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5.3 Avoid Hot Part Hazards

The engine, exhaust, transmission, cooling system and other ancillary parts on the ROXOR become very hot during operation. Burns from touching these parts can happen in less than one second, but can be very serious. Help reduce the risk of burns by following these instructions.

- Use cool water on the burned areas. Avoid ice and cold water.
- Clean the burn area immediately, and keep the area clean.
- Cover or wrap the burn with a clean, dry gauze pad, cloth or towel.
- For severe burns, call 911 and get medical attention right away.
- Do not apply butter, toothpaste, sprays, or other home remedies.

⚠WARNING *Avoid contact with the engine, exhaust, transmission, cooling system and other very hot parts, during and shortly after operation to avoid burns and any other severe injury.*

5.4 Accessories and Modifications

It is important to take the time to get familiar with the ROXOR once authorized and approved modifications are made, to help understand how to adapt your driving behavior accordingly. Mahindra parts and accessories have been specifically designed for use on the Mahindra ROXOR Offroad Side x Side. We strongly recommend that all parts and accessories you add to your ROXOR be genuine Mahindra parts and accessories, so as not to affect your safety, EPA compliance or factory limited warranty.

Do not tamper with unauthorized modifications or install equipment not specifically certified by Mahindra for the ROXOR. These modifications have not been tested by Mahindra and they may increase emissions, risk of injury, loss of control or render the ROXOR illegal to use or operate.

As an example, tampering with tire specifications or ride height (lift kit) may affect the behavior of the ROXOR and increase the risk of roll over and loss of control. If you have questions, consult your local authorized dealer for suitable, available accessories for your ROXOR.

⚠WARNING *The ROXOR was certified to EPA emissions and voluntary safety standards; including the ANSI ROHVA. Any modifications or addition of accessories may affect the certifications, emissions, safety and handling resulting in injury or death.*

NOTICE *A bulkhead grommet with additional nipples has been provided for accessories requiring wiring access to the engine bay. This grommet must be properly sealed to help prevent fumes and flames from entering the cockpit area and affecting you safety.*

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6 SAFE OPERATIONS AND RESPONSIBILITIES

The ROXOR is a two seat off-road work horse. Operators must be responsible and use care to avoid rollovers, tip overs, collisions, and other accidents. Even with vehicle safety features such as a Rollover Protective Structure (ROPS), seat belts, shoulder guards, side nets, doors (if equipped) and protective gear such as helmets and eye protection. There is always a risk of injury or death in these accidents. To help reduce the risk of severe injury or death, carefully follow the rules in this section.

6.1 Owner Responsibilities

Read this Operator's Guide and take advantage of the resources provided on the Recreational Off-Highway Vehicle Association (ROHVA) website (http://www.rohva.org). Always inspect and confirm the safe operating condition of your ROXOR prior to a ride. Always follow the maintenance schedule described in this Operator's Guide. Never allow anyone to operate your ROXOR unless they are responsible and can be trusted with an off-road vehicle like the ROXOR. Consider supervising new operators and setting rules and limits for anyone using your ROXOR (e.g., whether they can carry a passenger, what they may do with the vehicle, where they may ride, etc.). Always discuss the safety information with anyone who will be using the ROXOR. Be sure that the operator and passenger meet the qualifications below and agree to follow the safety information herein. Help users become familiar with the ROXOR and its equipment.

We encourage you to have an Annual Safety Inspection of your ROXOR. Please contact a ROXOR authorized dealer for further details. Though not required, it is recommended that a ROXOR authorized dealer performs the preseason preparation of your ROXOR. Each visit to your authorized dealer is a great opportunity for your dealer to verify if your vehicle is included in any campaigns. We also urge you to visit your authorized dealer in a timely manner if you become aware of any safety related campaigns.

6.2 Operator's Responsibilities

Read this Operator's Guide and take advantage of the resources provided on the ROHVA website [http://www.rohva.org]. Become completely familiar with the operational controls and the general operation of the ROXOR. Take a training course if available, contact a ROXOR authorized dealer to find out about training course availability in your area. New operators of the ROXOR should also perform the exercises in section **10 Learning Your Vehicle**. Practice driving in a suitable area free of hazards and feel the response of each control. Drive at low speeds. Higher speeds require greater experience, knowledge and suitable riding conditions.

All operators must have a proper driver's license in accordance with local laws. Be tall enough to be properly seated: back against the backrest with the seat belt fastened, hold the steering wheel with both hands and still be able to reach the full stroke of clutch, brake and accelerator pedals with the correct foot. Never use the ROXOR while consuming or under the influence of drugs or alcohol, or if

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tired or ill. These effectively slow your reaction time and impair judgment.

⚠WARNING *Operators must be at least 16 years of age or older, with a valid driver's license. Children under the age of 16 may not have the physical or psychological capability to operate the ROXOR without risk of injury or death.*

6.3 Passenger Responsibilities

The passenger must be properly seated in the passenger seat. The passenger must be tall enough to always be properly seated: back against the backrest with seat belt fastened and feet firmly planted on floor. Never carry a passenger who is consuming or under the influence of drugs or alcohol, or is tired or ill. These effectively slow reaction time and impair judgment. Instruct the passenger to read the vehicle's safety labels. Never carry a passenger if you believe their ability or judgment is insufficient to concentrate on the terrain conditions and adapt accordingly. More specifically for off-road vehicles such as the Mahindra ROXOR Offroad Side x Side, the passenger must also pay constant attention to the terrain ahead and be able to brace for bumps.

⚠WARNING *Only carry a maximum of one passenger, while properly seated and safety belted in the passenger seat. Failure could result in an un-belted passenger being ejected from the vehicle causing severe injury or death.*

6.4 Occupant Restraint System

The ROXOR is designed to carry one operator and one passenger, both wearing proper protective gear. Refer to section **8 Riding Gear** for more information. The operator and passenger must latch the side nets or close full doors (if equipped) and wear seat belts at all times when riding.

NOTICE *If driver's seat belt is not fastened when the ignition is turned on, the seat belt indicator lamp will flash and the throttle input will be limited.*

6.5 Riding Carefully

The ROXOR handles differently from other vehicles. A collision or rollover can occur quickly, particularly during abrupt maneuvers such as sharp turns, hard acceleration or deceleration, and driving on hills or over obstacles if you fail to take proper precautions. Never operate at excessive speeds. Always go at a speed that is proper for the terrain, visibility, and operating conditions, as well as your experience. Never attempt jumps, side slides, donuts or any other stunts. Never attempt rapid acceleration or deceleration when performing a sharp turn. This may result in a roll over. Never attempt skidding or sliding. If the vehicle starts to skid or slide, counter steer in the direction of skidding or sliding. On extremely slippery surfaces, such as ice, go slowly and be very cautious in order to reduce the chance of skidding out of control. Always be sure there are no obstacles or people behind the vehicle when you operate in reverse. Pay attention to blind spots. When it is safe to proceed in

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reverse, go slowly. Never exceed the stated load limits for this vehicle. Cargo must be properly secured. Reduce speed, allow for greater braking distance and follow all instructions in section **19 Moving Loads and Doing Work**. Always remember that the ROXOR is heavy! Its pure weight alone may entrap you should it tip or rollover.

6.6 Terrain Condition

The ROXOR is **not** equipped for, or legal to operate on, public streets, roads, or highways. If you must use the ROXOR on public streets, roads, or highways, avoid abrupt inputs to the steering wheel, accelerator pedal and brake pedal. Be alert of motor vehicles that are equipped for on road use, as the ROXOR is not.

Take the time to learn how the ROXOR performs in different environments by reading and comprehending section **18 General Driving Techniques**. Check the terrain carefully before you start up and down hills, enter or exit water, or drive through tall grasses when the surface texture is not visible. Remember that wet brakes may have reduced stopping ability. Test your brakes after leaving water and if necessary, apply them several times to let friction dry out the brakes.

Sudden changes in terrain caused by holes, depressions, banks, softer or harder ground or other irregularities may cause the vehicle to roll over or become unstable. To avoid this, slow down and always observe the terrain ahead. If the ROXOR does begin to rollover, the best advice is to immediately steer in the direction of the rollover and **do not** attempt to prevent a rollover with your arms or legs. Always keep your limbs inside the Rollover Protective Structure (ROPS).

- Always ensure to properly park the ROXOR on the flattest terrain section available. Refer to section **6.7 Stopping the Engine and Parking**
- Always go slowly and be extra careful when operating on unfamiliar terrain.
- Always be alert to changing terrain conditions.
- Always check for obstacles before operating in a new area.
- Always follow proper procedures for ascending or descending hills or crossing obstacles.
- Never assume that the ROXOR will go everywhere safely.
- Never operate on excessively rough, slippery or loose terrain.
- Never operate on hills too steep for your abilities. Practice on small inclines.
- Never go over the top of any hill at high speed.
- Never attempt steep hills or side hill traversing when pulling a trailer.
- Never operate in fast flowing water or in water deeper than specified in section **18.10 Crossing Shallow Water**

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6.7 Stopping the Engine and Parking

Release accelerator pedal and use brakes to completely stop the ROXOR. Turn the ignition key to the OFF position and remove key from ignition switch. When stopped or parked always put gear shift lever in first gear and set parking brake by pushing the button in, pulling straight up and then releasing button. To release parking brake, pull up slightly, push and hold button in, then release down to rest position and release button.

This is especially important when parking on a slope, you should always try to park on the flattest and most stable terrain available.

The nominal ground clearance for the ROXOR is 9" (22.9 cm).

⚠WARNING *On very steep inclines the wheels should be blocked using rocks or logs to help prevent sliding, avoid loose wet or slippery slopped terrain to further help prevent the ROXOR from sliding, avoid stopping or parking in places where hot parts like the engine, exhaust, transmission or cooling system may start a fire, like tall dry grass, failure to follow these warnings may result in severe injury or death.*

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7 IMPORTANT ON-PRODUCT LABELS

Replacement labels are free of charge and can be requested from a ROXOR authorized dealer with a registered Product Identification Number (PIN).

⚠WARNING *Removal of, or tampering with any of these important on-product labels is highly discouraged by Mahindra. Removal of these labels may result in operators missing critical safety instructions which may result in severe injury or death.*

⚠WARNING *A person who knowingly removes, obliterates, tampers with, or alters the Product Identification Number (PIN) on the ROXOR, with intent to further the theft of it pursuant to the Motor Vehicle Theft Prevention Act, shall be fined under this title, imprisoned not more than 5 years, or both.*

7.1 ANSI/ROHVA Labels

The labels in this section are to comply with the requirements set forth by the American National Standards Institute (ANSI), specifically standard ANSI Z535.4-2007.

The ROXOR is delivered with several labels containing important safety information. Some of these labels are affixed to the ROXOR for the safety of the operator, passenger and bystanders. They need to be clean and visible at all times. If missing or damaged, they need to be replaced. Replacement labels are free of charge and can be requested from a ROXOR authorized dealer with a registered Product Identification Number (PIN).

NOTICE *Any hang tags shown in this section should only be removed by the ultimate consumer after purchase. Any person who operates, or is a passenger in the ROXOR should be provided with and read and understand the information contained in the on-product labels before riding.*

Label Number – 0003AUA00090N
Name – Roll Over Protection Structure (ROPS)
Location – Left upper ROPS

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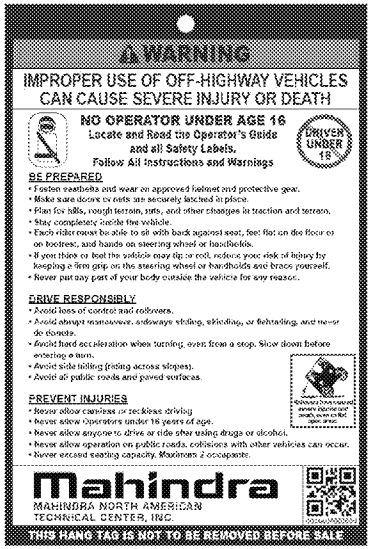
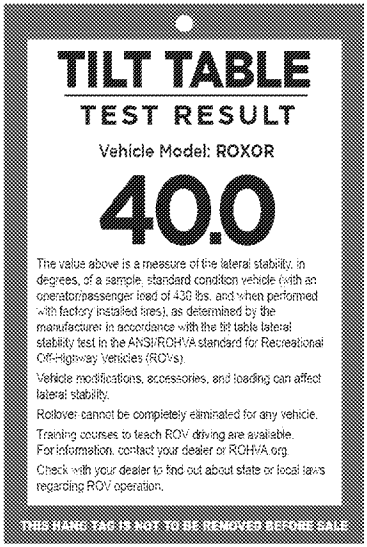
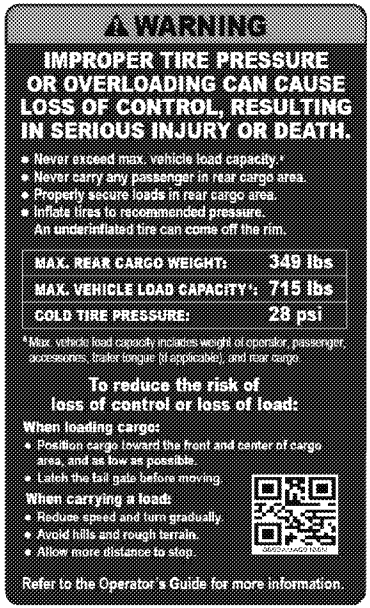
7 Important On-Product Labels





Hang Tag Number – 0003AUA00060N
Name – Pre-Sale & Tilt Table Information
Location – Center of front ROPS or rear view mirror (if equipped)



Label Number – 003AUA00100N
Name – Combined Tire Pressure and Overload
Location – Left B-pillar ROPS

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Label Number – 0003AUA00221N
Name – No Passenger in Cargo Area
Location – Right and left seat belt retractors, facing rearward

Label Number – 0003AUA00231N
Name – ROV Complies with ANSI/ROHVA 1-2016
Location – Right upper ROPS

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Label Number – 0003AUA00080N
Name – General Warning Label
Location – Left side of cup holder escutcheon

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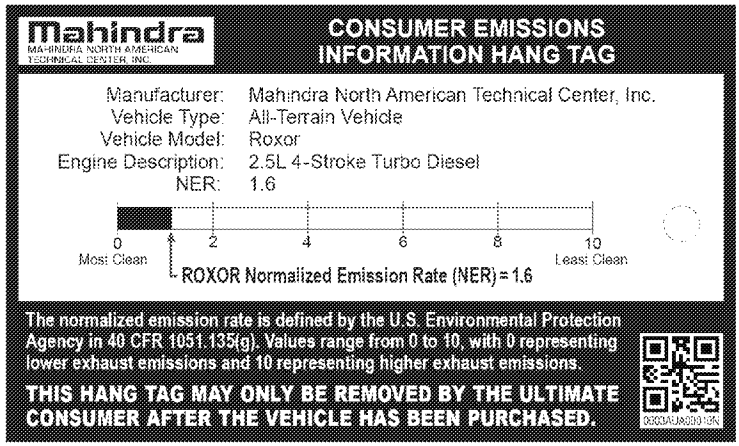
7.2 EPA Labels

The labels in this section are to comply with the requirements set forth by the Environmental Protection Agency (EPA). All EPA on-product labels with the ROXOR, should be considered a permanent part of the ROXOR. Upon replacement of parts that have EPA labels on them, make sure to order the applicable safety warning labels if not already installed on the replacement part.

The ROXOR is delivered with several labels containing important safety and emissions information. They need to be clean and visible at all times. If missing or damaged, they need to be replaced. Replacement labels are free of charge and can be requested from a ROXOR authorized dealer with a registered Product Identification Number (PIN).

NOTICE *Any hang tags shown in this section should only be removed by the ultimate consumer after purchase. Any person who operates, or is a passenger in the ROXOR should be provided with and read and understand the information contained in the on-product labels before riding.*



Hang Tag Number – 0003AUA00010N
Name – Consumer Emissions Information
Location – Base of steering column. To be removed by ultimate consumer after purchase.

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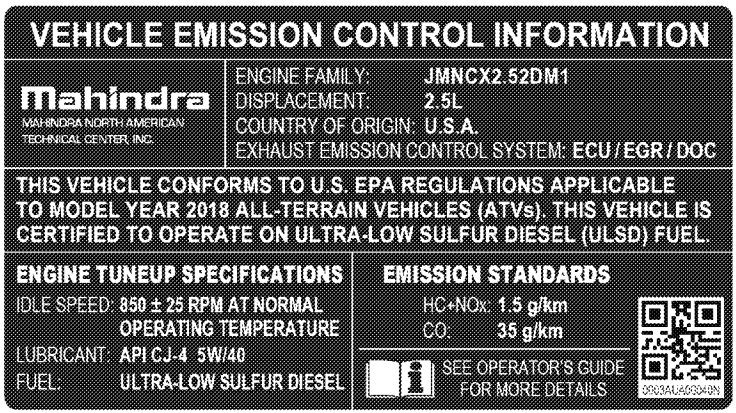
Label Number – 0003AUA00020N
Name – Off Road Use Only
Location – Center of dash panel



Label Number – 0003AUA00040N
Name – Vehicle Emissions Control Information (VECI) – 49 States
Location – Engine compartment, on the radiator support

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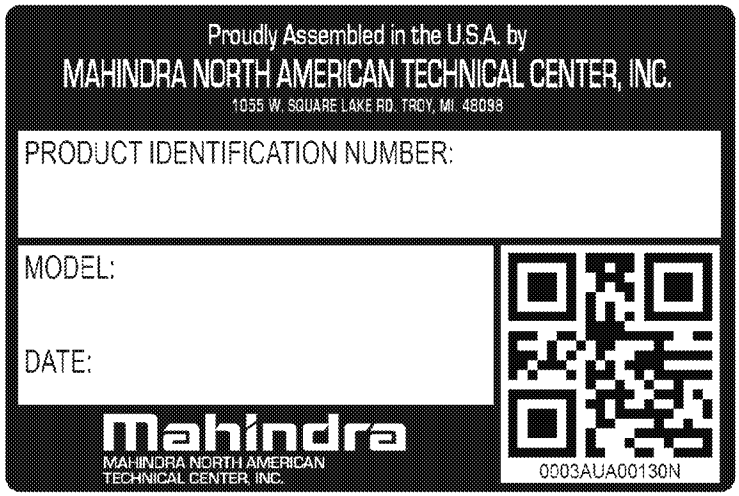


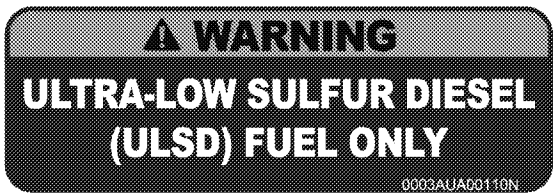
Label Number – 0003AUA00130N
Name – Product Identification Number (PIN)
Location – Engine Compartment, on the driver's side of bulkhead

7.3 Manufacturer Labels

The labels in this section are driven by Mahindra's commitment to product safety and making sure the operator of the ROXOR is fully aware of its capacities and limitations.

The ROXOR is delivered with several labels containing important safety information. Some of these labels are affixed to the vehicle for the safety of the operator, passenger and bystanders. They need to be clean and visible at all times. If missing or damaged, they need to be replaced. Safety labels are free of charge and can be requested from Mahindra Vehicle Sales and Service, Inc. with a registered Product Identification Number (PIN).

NOTICE *Any hang tags shown in this section should only be removed by the ultimate consumer after the vehicle has been purchased. Any person who operates, or is a passenger in this vehicle should read and understand the information contained in the on-product labels before riding.*



Label Number – 0003AUA00110N
Name – Ultra Low Sulfur Diesel (ULSD) Fuel Only
Location – Fuel fill pocket, right rear side of vehicle

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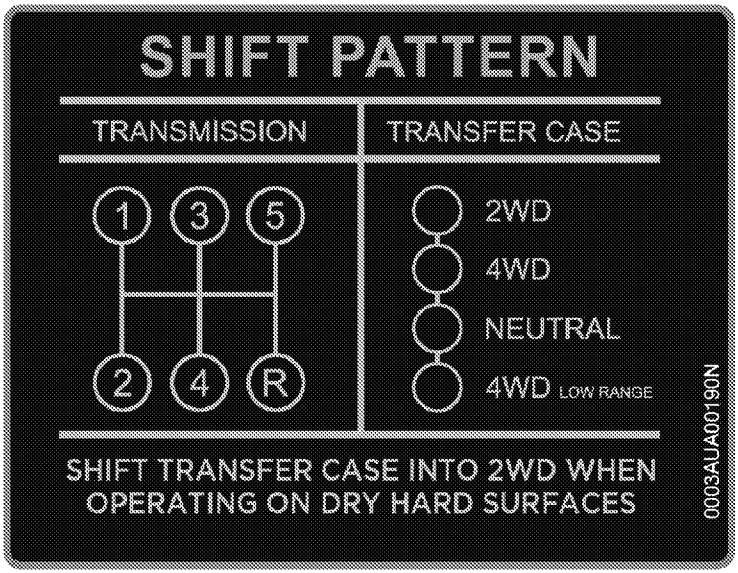
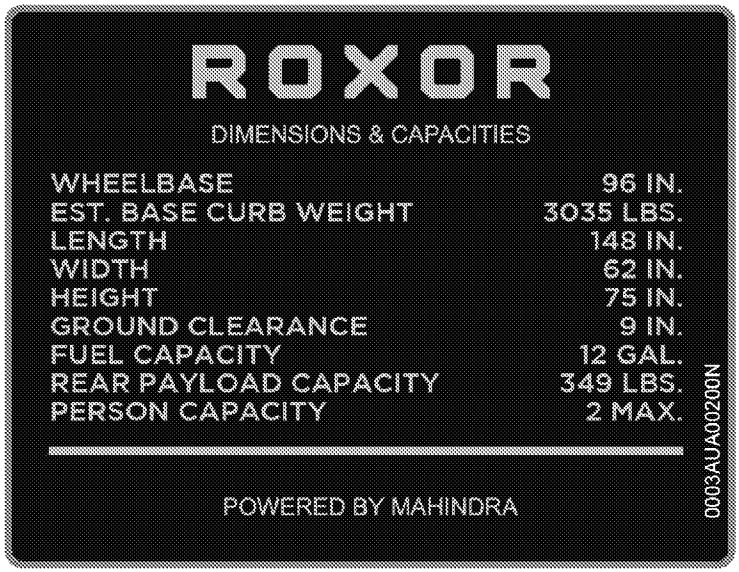


Label Number – 0003AUA00190N
Name – Shift Pattern and Transfer Case
Location – Dash panel



Label Number – 0003AUA00200N
Name – Dimensions and Capacities
Location – Dash panel

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Hang Tag Number – 0003AUA00251N
Name – Seat Belt Disconnected
Location – Driver's seat belt buckle end

Label Number – 0003AUA00261N
Name – Don't Do Anything Stupid
Location – Dash panel, right side behind passenger handhold

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8 RIDING GEAR

It is important that the operator and passenger always wears appropriate protective clothing and apparel, including an approved helmet, eye protection, boots, gloves, a long-sleeved shirt or jacket and long pants. Depending on conditions, anti-fogging eye protection may be required. Weather conditions should help you decide how to dress. To maximize comfort and avoid frostbite in winter, dress for the coldest weather expected. Thermal underwear next to the skin also provides good insulation. Never wear any loose clothing that may get entangled in the vehicle or on tree branches and shrubs.

8.1 Helmets and Eye Protection

Helmets protect you from head and brain injuries. Select a helmet that meets the Department of Transportation (DOT) safety standard in your state, province or country. A helmet should bear the standards DOT FMVSS 218 and/or ECE 22.05 and should fit snugly and fasten securely.

A helmet with full face protection is the best choice because it will protect your face from impacts. Branches, stones, insects and other flying objects cause injury to you and your passenger, as well as make you lose control of the ROXOR. For cold weather riding, a stocking cap or face mask will also offer protection from flying objects and the elements.

If you choose an open-face helmet, a snap on safety shield is preferred. An open-face helmet does not offer the same protection for the face and chin. The ROXOR's Roll Over Protection Structure (ROPS) and side nets can not prevent all objects from entering the cockpit area. In rough terrain conditions, your head may make contact with the ROPS or objects outside the ROXOR. The best helmet is no guarantee against injury, but statistically a helmet significantly reduces the risk of injury. Operator and passenger should always wear a helmet while riding in the ROXOR.

OSHA approved eye protection is also essential to see clearly and drive safely. Dust, dirt, rocks, bugs and branches not only distract and obstruct your vision but can permanently damage your eyesight. Most prescription eye glasses and sunglasses will NOT provide proper protection while driving the Mahindra ROXOR Offroad Side x Side. The lenses can shatter causing severe eye injury. Protective eye wear, goggles and face shields should bear one of the following standards, z87.1, z87.2, VESC8, V-8, or be made of a hard coated polycarbonate. Use tinted face shields or eye protection in the daytime only, use clear eye protection for driving at night.

⚠WARNING *Do not use tinted lenses at night or in low light conditions as these will limit your ability to see terrain contour, which may result in severe injury or death.*

⚠WARNING *Do not use tinted lenses if they effect your ability to see color, this may also result in severe injury or death.*

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8.2 Additional Riding Gear

Riding in the ROXOR without the additional riding gear listed below increases your chances of severe injury in the event of an accident.

Hearing Protection – Check your local laws before using hearing protective devices as they may not be allowed. Hearing protective devices can help prevent hearing loss but also reduce your ability to hear the surrounding sounds and may affect your safety.

Gloves – Gloves protect your hands from the elements and flying objects. Properly fitting gloves will improve your grip on the steering wheel and reduce fatigue. If gloves do not fit properly they may make it difficult to operate the ROXOR controls. For cold weather riding, gloves with sufficient insulation are required to protect your hands from frost bite.

Boots – You should not operate the ROXOR with open toed footwear. An over-the-ankle boot with non-slip soles are preferred and will help you keep your feet firmly on the floor and foot controls. Long shoelaces should be avoided, they can get tangled in the foot controls and prevent you from exiting the ROXOR. For cold weather riding, avoid oversized boots that may get trapped in the foot controls and prevent the proper operation of the ROXOR.

Clothing – Long sleeve shirts and long pants are preferred when operating the ROXOR. In the event of a crash the right clothing may prevent or reduce injury. For cold weather riding, wear sufficient insulation to protect yourself against hypothermia, a condition of lowered body temperature resulting in a loss of concentration, slower reaction times and muscle movement. Even in moderate temperatures, wind chill can make you cold and affect your reaction time. A windproof outer layer can prevent this. Always dress in layers so that clothing can be added and removed to keep you comfortable during your entire ride.

Rain Gear – On extended rides, carrying rain gear is a good idea. Dry riders will be much more alert and comfortable.

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9 PREPARE TO RIDE

Before a ride, the operator should always perform a Pre-Ride Inspection to confirm the safe operating condition of the ROXOR. Refer to section **9.1 Pre-Ride Inspection Checklist**. Operator and passenger must be properly seated, with both side nets latched and doors closed (if equipped) and seat belts fastened. Wear the appropriate riding gear. Refer to section **8 Riding Gear** for more information.

⚠WARNING *Perform a Pre-Ride Inspection before each ride to help detect any potential problems that could occur during operation. The Pre-Ride Inspection can help you monitor component wear and deterioration before they become a problem. Correct any problem that you discover to help reduce the risk of a breakdown or accident.*

NOTICE *Always follow the maintenance schedule described in this Operator's Guide to also keep your vehicle in safe working order.*

9.1 Pre-Ride Inspection Checklist

What to do before starting the engine

- Check tire pressure and condition. Recommended cold tire pressure is 28 psi.
- Check wheels for damage and abnormal play. Make sure lug nuts are torqued to between 71-105 Nm.
- Check cleanliness of radiator cooling fins.
- Check engine oil level. Maintain between the two notches on dip stick.
- Check engine coolant level. Maintain between HIGH and LOW lines on the coolant overflow bottle when engine is cold.
- Check brake fluid level. Maintain between MIN and MAX lines on the brake fluid reservoir with no pedal pressure.
- Check clutch fluid level. Maintain between MIN and MAX lines on the clutch fluid reservoir with no pedal pressure.
- Inspect the engine air filter, clean or replace if needed.
  - Service engine air filter more often in dusty conditions
- If you are transporting cargo, respect the maximum rear cargo weight capacity.
  - Ensure cargo is properly secured in the rear cargo area.
  - Ensure maximum vehicle load capacity does not exceed specifications. This includes operator, passenger, added accessories, trailer tongue weight (if applicable), and rear cargo.
- Check tailgate is properly latched.
- If you are pulling a trailer or other equipment, respect the trailer tongue capacity and towing capacity
  - Ensure trailer hitch and trailer ball are properly secured.
  - Ensure trailer is properly secured to trailer hitch and ball.
  - Limit operation to safe level terrain.

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- Check underneath vehicle for any debris on chassis or suspension and clean them properly.
- Check operation of indicator lamps.
  - This can be done during the first few seconds of key ON.
- Check operation and cleanliness of headlights and taillights.
- Check operation of high and low beam headlights.
- Check operation of brake lights.
- Check seats are properly latched.
- Check side nets for any damage, fasten both side nets and confirm they latch securely. Use the adjustment strap to tighten nets as required.
- Check seat belts for any damage, fasten seat belts and confirm they latch securely.
- Press on the accelerator pedal a few times to ensure it operates freely and it returns to the rest position when released.
- Press on the brake pedal and make sure you feel firm resistance and it returns to the rest position when released.
- Check the fuel level.
- Adjust mirror(s) to your preferences. (If equipped)

What to do after starting the Engine

- Check if steering wheel operates freely by completely turning it from side to side.
- Turn the ignition switch to OFF to verify if engine will shut down. Restart engine.
- Check smooth and free operation of shift lever.
- Check smooth and free operation of 2WD/4WD selector.
- Drive forward slowly a few feet and apply brakes. The brake pedal must feel firm when applied. The pedal must return to rest position when released. The brakes must respond adequately to the operator's input.
- Check parking brake operation.

⚠WARNING *Damaged or missing seat belts, shoulder guards and side nets should be replaced immediately to help prevent an occupant from being ejected, resulting in severe injury or death.*

NOTICE *Refer to section **26 Specifications** for more information on fluid volumes and specifications.*

*Refer to section **23 Maintenance Procedures** for more detailed instructions where applicable.*

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9.2 Post-Ride Inspection Checklist

Always inspect and confirm your ROXOR and safety devices have not been damaged after a ride. Always follow the maintenance schedule described in this Operator's Guide.

What to Do After Stopping the Engine

- Clean the ROXOR and all moving parts.
- Let drivetrain cool and then check fluid levels, top off as necessary.
- Inspect and remove all dirt and debris from your engine, transmission, exhaust and other components that can get hot during a ride.
- Check for fluid leaks in the engine compartment and under ROXOR.
- Properly park the ROXOR on the flattest surface available.
- Put gear shift lever in first gear and set parking brake by pushing the button in, pulling straight up and then releasing button.
- Remove the ignition key before leaving the ROXOR.

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10 LEARNING YOUR VEHICLE

Mahindra recommends that you contact your local ROXOR authorized dealer for information about ROV training courses in your area, or visit the Recreational Off-Highway Vehicle Association (ROHVA) website (http://www.rohva.org). All operators should familiarize themselves with the handling of the Mahindra ROXOR Offroad Side x Side in a controlled environment before they go off-roading. Find an area free of obstacles to practice and perform the exercises listed below. And never perform these exercises with a load in the cargo area or with a trailer attached.

Starting the Engine – Insert the ignition key into the ignition switch, depress clutch pedal fully then turn the ignition key to the START position. Release the ignition key immediately when the engine has started.

Do not hold ignition key in START position for more than 10 seconds at a time, this can overheat the starter and damage it. Improper use may result in a limited warranty claim being denied.

⚠WARNING *Never use an engine starting aid such as ether. Engine damage will result which would void all of your warranty coverage.*

NOTICE *If the engine does not start after repeated attempts, refer to section **27 Troubleshooting**.*

Manual Transmission – If you have never driven a vehicle with a manual transmission, learning on the ROXOR while driving off-road is not advisable. A manual transmission requires the operator to shift gears themselves, with proper timing and coordination. This activity must become second nature, in a controlled environment, before operating on difficult terrain.

The clutch pedal is located at the far left and is required to shift gears. Always fully depress the clutch pedal while shifting gears, then gradually release the clutch pedal to engage the transmission while increasing the engine idle to around 1500 RPM. Change one gear at a time in ascending or descending order. As a general rule, you should shift gears about every 10 mph increase or decrease in speed. When switching from a forward gear to reverse, or from reverse to a forward gear, come to a complete stop.

⚠WARNING *Never try to start the ROXOR without being seated in the driver's seat with the clutch pedal fully depressed and the parking brake set to help prevent a runaway situation in the event the throttle is stuck.*

Turning – Overly aggressive turning frequently results in accidents. You should practice turning in both directions at various speeds to experience the lateral force differences. Speed and steering input will affect lateral force, you should try to minimize this force for safety. Decelerate before entering a turn and accelerate slowly as you exit the turn. You should also practice U-turns and turning while driving in reverse.

Braking – It is important to get familiar with the braking response on the ROXOR. Start at slow speeds and low pedal force. Gradually

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increase your speed and pedal force to understand adequate braking distance without locking up the wheels. It may also be a good idea to practice an emergency stop to see how the ROXOR reacts. Always brake in a straight line with little to no steering input.

Reverse – Learn how the ROXOR handles in reverse and more importantly how it reacts to steering inputs while driving in reverse. You should also familiarize yourself with the distance required to see obstacles behind you. Place an orange cone or other non-destructible item close to the rear bumper and then pull forward until you can see the item from the driver's seat. You can even practice backing up to these items without hitting them. Take note of the distances.

Emergency Engine Stop – While driving at a slow speed, turn off the ignition switch. Take note of how the ROXOR reacts when the engine stops running. It is a good idea to develop this reflex in case of an emergency. You may also want to practice an emergency exit, which will require stopping the engine, immobilizing the ROXOR, removing the seat belt, detaching the safety net (or opening the door) and exiting the ROXOR.

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11 VEHICLE CONTROLS

11.1 Primary Controls

All operators should familiarize themselves with all of the controls on the Mahindra ROXOR Offroad Side x Side, in a controlled environment, before going off-road. Find a flat area free of obstacles to practice and perform the exercises listed in section **10 Learning Your Vehicle**. Emphasis should be placed on the development of smooth and coordinated use of these controls, knowing their locations and understanding their function.

11.2 Keys

The ROXOR is delivered with four keys. Two rubber booted ignition keys and two storage compartment keys. There is a lockable storage compartment located under each front seat.

> **NOTICE** *Neither of these two lockable storage compartments is waterproof. All electronics or other valuables stored in these compartments should be adequately protected by other means.*

11.3 Ignition Switch

The ignition switch is located on the dash panel to the right of the steering wheel.

- **ACC position** – in this position all lights, horn, radio, 12V outlet and optional accessories are turned on, but not the instrument cluster and engine controls.

> **NOTICE** *Leaving the ignition key in the ACC position could eventually result in a dead battery.*

- **OFF position** – in this position the electrical system is disabled and the engine will shut off.

> **NOTICE** *You should only be able to insert and remove the ignition key when the ignition switch is in the OFF position. If this statement is not true, contact and return your ROXOR to an authorized dealer.*

- **IGN & ACC position** – in this position all ACC functions are activate as well as the instrument cluster and engine controls. When starting in cold climates, the ignition key should remain in this position for several seconds to allow time for the engine intake heater to aid starting.

> **NOTICE** *The ignition key should automatically return to this position when released from the start position. If this statement is not true, contact and return your ROXOR to an authorized dealer.*

- **START position** – in this position the starter is engaged. You should only hold the ignition key in this position until the engine

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starts, then release the ignition key.

> **NOTICE** *Do not hold the ignition key in the START position for more than 10 seconds at a time, this can overheat the starter and damage it. You should allow 10-15 seconds between attempts to preserve the starter and battery.*

> **NOTICE** *If the engine does not start after repeated attempts, refer to section **27 Troubleshooting**.*

11.4 Headlamp Switch

A three position switch is used to control the head lights on the ROXOR.

- **Up position** – High Beam Headlights
- **Middle position** – Headlights Off
- **Down position** – Low Beam Headlights

11.5 Multifunction Gauge

The speedometer and odometer (see **Figure 1**) are preset at the factory to indicate in miles.

- **Speedometer** – indicates vehicle speed in miles per hour.
- **Odometer** – records the total distance traveled in miles.
- **Hours Meter** – the total hours on your vehicle will display below the miles when the ignition key is in the ON & ACC position.
- **Indicator Lights:**
  - Oil Indicator – red light on steady when the oil pressure is below a safe level.
  - Seat Belt Indicator – red light on steady when the driver's seat belt is unbuckled, the throttle will also be limited.
  - Low Fuel Indicator – yellow light on steady when fuel level is at two gallons or less. Light flashes when fuel level sensor has failed to provide a signal.
  - Check Engine Indicator – yellow light on steady when an emissions related trouble code has been set, return vehicle to an authorized Mahindra dealer for service.
  - Water In Fuel Indicator – yellow light on steady when water reached sensor contacts in the fuel filter canister, drain water from fuel separator.
  - Engine Coolant Temperature Indicator – red light flashes when engine coolant temperature reaches 230°F (110°C) and stays on steady at 248°F (120°C) or above. Light will go off when engine coolant temperature drops below 221°F (105°C).
  - Charging System Indicator – red light on steady when there is a charging system failure, check alternator and/or battery. This light will be on when the ignition key is in the IGN & ACC position but the engine is not running.

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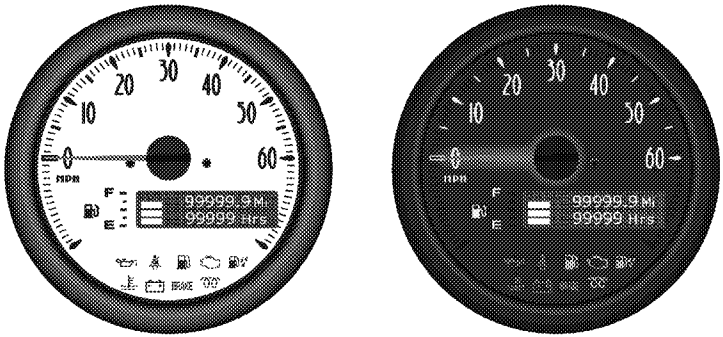
- Brake System Indicator – red light on steady when the brake fluid level is below the minimum level or the parking brake is set.
- Wait To Start Indicator – yellow light on steady in IGN & ACC position. Engine intake air heater is on due to engine temperature, wait for light to go out before cranking.

- **Fuel Gauge:**
  - 4 bars – 87% or more fuel in tank
  - 3 bars – 62% or more fuel in tank
  - 2 bars – 38% or more fuel in tank
  - 1 bar – 13% or more fuel in tank
  - Bottom Bar Outlined Only – 12% or less fuel in tank



Base Speedo
Day Time View
Telltales Shown OFF

Base Speedo
Night Time View
Telltales Shown ON

Figure 1. Multifunction gauge

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11.6 Steering Wheel

The steering wheel is located on the driver's side of the vehicle, in front of the driver's seat. Use the steering wheel to control your direction when moving forward and backward. Grip the steering wheel with both hands, and never wrap your thumbs around the steering wheel.

⚠CAUTION *Under rough trail conditions or when crossing an obstacle, the steering wheel could suddenly jerk in one direction or the other. Grip the steering wheel with both hands, without having thumbs wrapped around the steering wheel. Hand and/or wrist injuries may occur if the thumbs are wrapped around the steering wheel.*

11.7 Accelerator Pedal

Of the three pedals located on the driver's side floor area, the accelerator pedal is on the far right. The accelerator pedal controls the engine speed and should be operated smoothly and reasonably. The accelerator pedal is spring loaded and should return to its rest position (idle) when not pressed. Take your ROXOR to an authorized dealer if you are experiencing problems.

NOTICE *The throttle input will be limited if the driver's seat belt is not fastened.*

11.8 Brake Pedal

The brake pedal is located in the middle of the three pedals on the driver's floor area. Use the brake pedal slow down or stop the ROXOR. When driving a manual transmission it is preferred to use your right foot to operate this pedal. It is spring loaded and should return to its rest position (little to no rolling resistance) when not pressed.

NOTICE *If the ROXOR will not move with your foot off of the brake pedal, first check and release the parking brake. Next make sure the transmission is in gear. If neither of these work, take your ROXOR to an authorized dealer.*

11.9 Clutch Pedal

Of the three pedals located on the driver's floor area, the clutch pedal is on the far left. To disengage the clutch, fully depress the clutch pedal when shifting gears. Don't grind the gears during shifting, this may result in damage to the gears. Do not allow your foot to rest on the pedal when not using the clutch. This can overheat the clutch plates and result in premature clutch failure. You should avoid these habits as they may result in having a limited warranty claim denied due to improper use.

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WARNING *Never try to start the ROXOR without being seated in the driver's seat with the clutch pedal fully depressed and the parking brake set to help prevent a runaway situation in the event the throttle is stuck.*

11.10 Gear Shift Lever

The shift pattern is located on top of the gear shift lever knob. Use the gear shift lever to shift between forward gears and access reverse. When shifting gears, always depress the clutch fully and let up on the accelerator pedal before moving the gear shift lever to the next gear.

NOTICE *Bring the ROXOR to a complete stop with engine running before shifting into reverse to prevent gear damage and ease engagement.*

11.11 Transfer Case Lever

The transfer case shift pattern is located on top of the transfer case lever knob. Use the transfer case lever to switch between 2WD and 4WD operation. 4WD has a Low range and High range.

4WD Low range allows the vehicle to drive at much slower speeds while still operating within the usable power band / RPM range of the engine. This also increases the torque available at the axles. Low range gears should be used during slow speed or extreme off-road conditions.

NOTICE *Bring the ROXOR to a complete stop with engine running before shifting the transfer case into 4WD Low Range to prevent gear damage and ease engagement. The ROXOR can be shifted between 2WD and 4WD High ranges at any speed.*

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12 EQUIPMENT

12.1 Seat Belts

The ROXOR is equipped with 3-point seat belts to help protect operator and passenger in the event of a collision, roll over, or tip over. The seat belts can help occupants stay in the cockpit area. The seat belts are equipped with a semi-cinching tab that locks the lap belt when the webbing is under tension. To fasten the seat belt, insert the latch plate into the buckle, then pull the belt to ensure it is properly fastened. Adjust the seat belt tightly against your body by pulling the shoulder belt upwards.

⚠WARNING *Wear seat belts properly and keep side nets secured at all times. Seat belts help reduce the risk of severe injury in a crash and help keep limbs inside the cockpit in a roll over or any other types of accidents.*

⚠WARNING *Do not fasten the driver's seat belt while accelerating, an unintended sudden acceleration will result, which could cause a loss of control resulting in severe injury or death.*

NOTICE *If driver's seat belt is not fastened when the ignition is turned ON, the seat belt indicator lamp will flash and the throttle input will be limited.*

12.2 Driver's Seat

The driver's seat can be adjusted forward and backward. To adjust seat, move the seat lever up to unlock the seat. Release the lever to lock the seat into desired position.

⚠WARNING *To help prevent a loss of control, never adjust the seat position while driving. A loss of control while driving could result in severe injury or death.*

12.3 Passenger Seat

The passenger's seat can be adjusted forward and backward. To adjust seat, move the seat lever to unlock the seat. Release the lever to lock the seat into desired position.

⚠WARNING *There is no indicator light or message for the passenger seat belt. The operator is responsible for the passenger's safety and should ensure the passenger buckles their seat belt, secures their side net and keeps their limbs inside the vehicle to help prevent severe injury or death.*

⚠WARNING *Never adjust the seat position while moving, this could result in personal injury.*

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12.4 Rollover Protective Structure (ROPS)

The ROXOR is equipped with a tubular frame over the cockpit and rear cargo areas, called the ROPS (Rollover Protective Structure). It is designed to help keep the operator and passenger restrained and help provide protection to the cockpit.

⚠WARNING *The ROPS is an integral part of the safety system and must not be removed. Removal of the ROPS severely increases the risk of injury or death in a rollover or any other accident.*

12.5 Shoulder Guards

The ROXOR is equipped with operator and passenger shoulder guards. They are designed to help restrain the entire body and also help the operator and passenger to remain inside the cockpit.

⚠WARNING *The shoulder guards are an integral part of the safety system and must not be removed. Removal of the shoulder guards severely increases the risk of injury or death in a rollover or any other accident.*

12.6 Side Nets

The ROXOR is equipped with operator and passenger side nets. They are designed to help arms and legs remain inside the cockpit. Side nets can also help keep bush and debris out of the cockpit.

⚠WARNING *The side nets are an integral part of the safety system and must not be removed. Removal of the side nets severely increases the risk of injury or death in a rollover or any other accident.*

12.7 Passenger Handhold

The ROXOR is equipped with a hand hold on the passenger side of the cockpit. It is designed to help keep limbs inside the cockpit.

⚠WARNING *The passenger handhold is an integral part of the safety system and must not be removed. Removal of the passenger handhold severely increases the risk of injury or death in a rollover or any other accident.*

12.8 12 Volt Power Outlet

The ROXOR is equipped with one 12 volt power outlet, located on the right side of the dash panel.

12.9 Storage Compartments

The ROXOR is equipped with two lockable storage compartments, one under each seat.

NOTICE *Neither of these two lockable storage compartments is waterproof. All electronics or other valuables stored in these compartments should be adequately protected by other means.*

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12.10 Cup Holders

Two cup holders are located on the floor between the seats.

12.11 Rear Cargo Area

The ROXOR is equipped with a rear cargo area. The rear cargo area may be used for hauling various types of cargo. Properly secure all loads in the rear cargo area using the factory supplied cargo tie downs only. To help reduce the risk of loss of control, or loss of load use the cargo area in accordance with section**19 Moving Loads and Doing Work**.

⚠WARNING *Never carry any passenger in the rear cargo area. A passenger in this area can not be properly restrained and could be ejected, resulting in severe injury or death.*

12.12 Tailgate

The ROXOR is equipped with a swing style tailgate. The tailgate is designed to ease loading the rear cargo area and also carrying an optional spare tire. Always close the tailgate before operating to prevent damage to the tailgate, lock mechanism and/or cargo.

⚠WARNING *Failure to close the tailgate before operating could result in the lose of cargo loads, severely increasing the risk of injury or death.*

12.13 Fuel Reservoir Cap

The fuel reservoir cap is located on the right side behind the rear wheel.

Refer to **14.1 Fuel Requirements** or **14.2 Fueling Procedure** for more on fuel related information.

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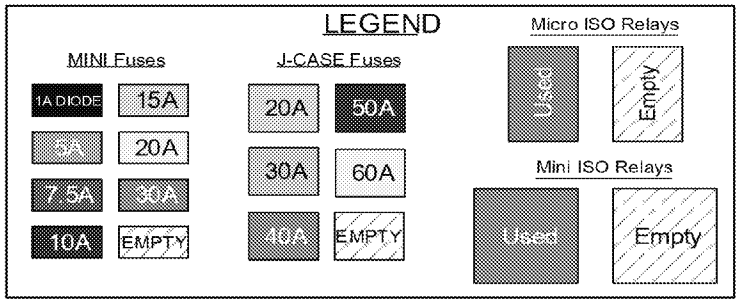
13 ELECTRICAL DISTRIBUTION



The Distribution Center Legend shown above outlines the types and sizes of fuses and relays used on the Mahindra ROXOR Offroad Side x Side.

Main Power Distribution Center – This component is located in the engine bay on the passenger side. The Main Power Distribution Center cover contains a similar graphic to the one shown here for convenience. (see **Figure 2**)

IP Power Distribution Center – This component is located behind the dash panel on the passenger side. The IP Power Distribution Center cover contains a similar graphic to the one shown here for convenience. This component can be released from its mounting bracket and lowered down for ease of viewing and access. Use the tang supplied on the 12 Volt Power Outlet connector or a flat screw driver to help release the distribution center from the mounting bracket. (see **Figure 3**)

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Main Power Distribution Center			
Fuse/ Relay	**Circuit**	**Fuse/ Relay**	**Circuit**
F1	Main PDC Fuse (60A)	F16	Empty
F2	Starter Solenoid (30A)	F17	Empty
F3	ECU Auto Shut Down (30A)	F18	Empty
F4	IP PDC MINI Fuse (40A)	F19	Empty
F5	IP Accessories (40A)	F20	Empty
F6	Empty	F21	Empty
F7	ECU Power (20A)	F22	Empty
F8	Engine Accessories (15A)	R1	Engine Auto Shut Down
F9	Brake Pedal (10A)	R2	Starter Solenoid
F10	Empty	R3	Fuel Feed Pump
F11	High Beams (20A)	R4	High Beams
F12	Front LED Lights (20A) *	R5	Empty
F13	Reverse Lights (5A)	R6	Empty
F14	Front Fender LEDs (5A) *	R7	Front LED Lights *
F15	Fuel Feed Pump (15A)	R8	See IP-PDC

* Indicates a circuit dedicated for a factory installed option.

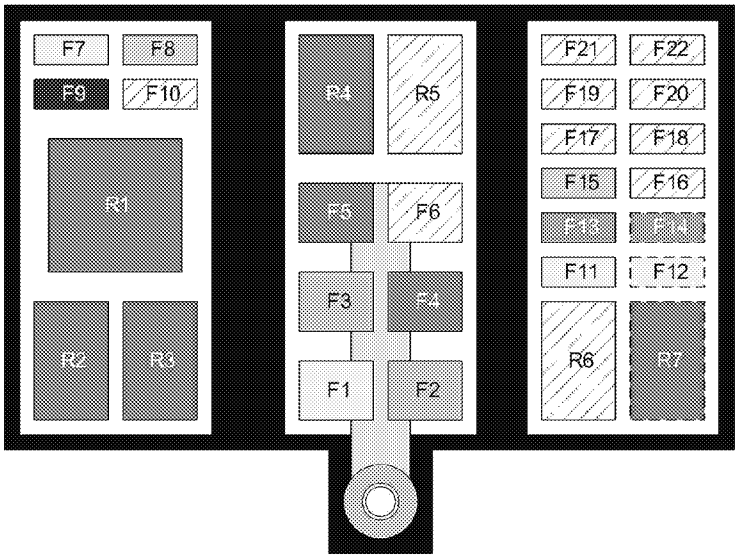

Figure 2. Main Power Distribution Center

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IP Power Distribution Center			
Fuse/ Relay	Circuit	Fuse/ Relay	Circuit
F23	Exterior Lighting (20A)	F30	Sound Bar (15A) *
F24	Power Outlets (20A)	F31	Instrument Gauges (10A)
F25	Diagnostic Connector (5A)	F32	Parking Lights (10A)
F26	High Beam Control (5A)	F33	Empty
F27	Key Switch (10A)	F34	Low Beams (15A)
F28	Side/Rear LEDs (10A) *	R8	Exterior Lighting
F29	Horn (15A)	R9	Power Outlet

* Indicates a circuit dedicated for a factory installed option.

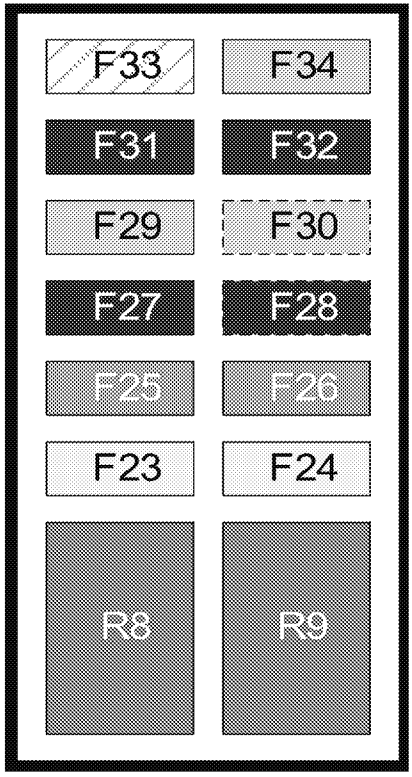

Figure 3. IP Power Distribution Center

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14 FUEL (DIESEL)

14.1 Fuel Requirements

The EPA has adopted multiple tiers of emission standards to reduce emissions from non-road diesel engines. From 2007 to 2014, Low Sulfur Diesel (LSD) fuel and Ultra Low Sulfur Diesel (ULSD) fuel was phased in for non-road, locomotive, and marine (NRLM) diesel fuel. This off-road diesel requires ULSD rated fuel that meets the EPA Non-road Diesel Fuel Standards (https://www.epa.gov/diesel-fuel-standards).

Damages, performance or service concerns determined to be caused by the use of non-approved fuels, including any grade of gasoline or form of bio-diesel fuel not meeting the specifications outlined above are not considered to be defects in material or factory workmanship and are not covered under the limited warranty or EPA limited warranty.

⚠CAUTION ***Do not*** *use diesel fuel additives in a diesel equipped ROXOR, this will damage the injectors voiding your warranty coverage.*

⚠CAUTION ***Do not*** *put gasoline in a diesel equipped ROXOR. Gasoline will prematurely ignite in a diesel engine which can lead to engine damage, voiding all of your warranty coverage. Gasoline contamination can also damage the fuel pump and diesel injectors, which would also void all of your warranty coverage.*

14.2 Fueling Procedure

1. Stop the engine.
2. Only fill the fuel tank in a well ventilated area.
3. Have the operator and passenger get out of the ROXOR.
4. Unscrew fuel reservoir cap slowly by turning it counterclockwise to remove it.
5. Insert the fuel spout into the fuel filler neck.
6. Pour fuel slowly so that air can escape from the tank and prevent fuel flow back and spills.
7. Stop filling before the fuel reaches the bottom of filler neck. Do not overfill or spill fuel.
8. Fully tighten fuel reservoir cap by turning it clockwise until a ratchet noise is heard.

⚠WARNING *All fuel handling must take place in a well-ventilated area. Avoid heat, flames and other sources of ignition, avoid inhalation of vapors and contact with skin and eyes, do not siphon diesel fuel by mouth, never fill a fuel container inside the ROXOR as the interior surfaces are coated, acting as an insulator and allowing static electricity to build up, help guard against static discharges by always filling approved containers on the ground, do not allow anyone to remain in the ROXOR while fueling, an occupant may not be able to leave the area quickly in an emergency, failure to follow these warnings may result in severe injury or death.*

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15 BREAK IN PERIOD

15.1 Operation During Break In

A break-in period of 10 operating hours or 300 mi (480 km) is required for this vehicle. Mahindra recommends that the engine oil and filter be replaced after this break in period has been completed.

During the break in period it is best to avoid pressing the accelerator pedal beyond 3/4 of its full stroke. Avoid extended hard accelerations like those required for hill climbing. Avoid extended periods at steady cruising speeds, it is best to vary your speed as much as possible during this period. Brief accelerations and speed variations contribute to a good break-in.

During the break in period you should also shift the transfer case between 2WD and 4WD High range at low speeds (1-5 mph). This also contributes to a good break in and will familiarize you with the effort required to perform this operation while moving.

NOTICE *Bring the ROXOR to a complete stop with engine running before shifting the transfer case into 4WD Low Range to prevent gear damage and ease engagement. The ROXOR can be shifted between 2WD and 4WD High ranges at any speed.*

15.2 Tips for Maximizing Durability

Riding style and conditions have a direct impact on durability. If riding in any of the following conditions, Mahindra highly recommends you not maintain wide open throttle (WOT) for more than two (2) minutes. Examples of wide open throttle (WOT) are high ambient temperatures above 86°F (30°C), heavy passenger and/or cargo loads, heavy drags like soft sand and/or hill climbing and mud bogs. After a few minutes at WOT, partially release the accelerator pedal and allow the engine and drivetrain to cool down.

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16 AVOIDING ACCIDENTS

Operators must be responsible and use care to avoid roll overs, collisions, and accidents. The ROXOR is designed and manufactured for off-road use only. The ROXOR does not conform to Federal Motor Vehicle Safety Standards (FMVSS) and operation on public streets, roads, or highways is illegal and increases the risk of an accident involving other vehicles.

Avoid roll overs. The ROXOR handles very different from other vehicles. A roll over can occur quickly with sudden changes in terrain. Holes, humps, obstacles and soft ground can result in the ROXOR becoming unstable. Aggressive driving habits can also result in roll overs and loss of control, even on flat terrain. Therefore, it is particularly important to fasten seat belts and side nets, secure the doors (if equipped) and wear an approved helmet and riding gear. Never try to stop a roll over using your arms or legs. Never put any part of your body outside of the ROXOR for any reason. If you think or feel the ROXOR may tip or roll, reduce your risk of injury by keeping a firm grip on the steering wheel or handholds and brace yourself. Keep feet firmly planted on the floor.

Avoid driving across a slope when possible, instead, drive straight up and down inclines rather than across them. If driving across a slope is unavoidable, use extreme caution. If you feel the ROXOR start to roll over steer downhill if possible.

Avoid speeding. The ROXOR can reach high speeds, particularly in challenging off-road conditions. At higher speeds there is an increased risk of losing control, an increased risk of collision and an increased risk of injury or death. Always drive at a speed that matches the terrain, visibility and your experience. Slow down on uneven terrain and allow more distance to stop. The ROXOR also handles differently when carrying a load or pulling a trailer. Reduce speed and follow instructions in this Operator's Guide for carrying a load or pulling a trailer.

Avoid paved surfaces. If you must drive on paved surfaces, take it slow and use care when turning. Abrupt steering inputs and hard acceleration and braking, even at slow speeds can result in an accident. Never attempt to do donuts, skids, slides, fishtails, jumps, or other stunts with the ROXOR.

⚠WARNING *The ROXOR does not conform to Federal Motor Vehicle Safety Standards (FMVSS) or US EPA on- highway exhaust emissions regulations. And as such, does not have important features and equipment that on road vehicles have, like brake lights and airbags. Driving on public streets, roads or highways without these important features and equipment can lead to severe injury, including death.*

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17 OFF-ROAD OPERATION

Driving off-road or more specifically on unsurfaced roads or two tracks, made up of materials like sand, gravel, mud, snow, rocks, and other natural terrain is hazardous and can be dangerous. Any terrain which is not specially prepared to carry vehicles presents an inherent danger. An operator who ventures off-road should always exercise the utmost care in selecting the safest path and keeping a close eye on the terrain ahead of them. This Mahindra ROXOR Offroad Side x Side should never be operated by someone who is not very familiar with how to control it.

Persons taking part in this activity have sometimes been met with criticism for the environmental damage incurred by their vehicles. Please be courteous and limit your use of the ROXOR to private property or areas specifically designated for off-road activities. Always practice the "Leave no Trace" and "Tread Lightly!®" principles and ethics of outdoor conservation. Always respect nature and the rights of others to enjoy it.

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18 GENERAL DRIVING TECHNIQUES

18.1 Driving Tips

- Stay alert to changing terrain conditions as slopes and obstacles can decrease stability.
- Proceed slowly when entering unfamiliar terrain, if in doubt, back out.
- Power and traction, not speed, are most important in driving off-road.
- Keeping both hands on the steering wheel is the best way to maintain control.
- Make every attempt to avoid obstacles that could enter the cockpit area and hit you or your passenger.
- Never operate the ROXOR if the controls do not function normally, instead take it to a ROXOR authorized dealer.

18.2 Driving in Reverse

- Choosing a safe place to turn around is always preferred whenever possible.
- Be aware that abrupt steering inputs while driving in reverse can increase the risk of a roll over.
- When operating in reverse, check that the path behind the ROXOR is free of people and/or obstacles.
- When safe, proceed with care and caution, go slowly and avoid sharp turns.
- Always maintain a level of alertness to your blind spots when driving in reverse.
- Pay attention to blind spots. When it is safe to proceed in reverse, go slowly and avoid sharp turns.

⚠WARNING *When driving downhill in reverse, gravity can increase your speed above a safe level. Always use engine and gears to slow descent rate and prevent over heating the brakes.*

18.3 Driving in or on Slippery Surfaces

- Slow down and avoid abrupt steering inputs to prevent sliding and roll overs.
- Be aware that it may take longer to stop your ROXOR, be cautious and avoid locking the brakes.
- Hard accelerations on these surfaces may result in loose material to be thrown rearwards into the path of others.
- Hard accelerations may result in tire spin, the ROXOR to sink, eventually becoming stuck.
- Use lower gears a nd/or 4WD Low Range to help prevent tire spin.

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18.4 Driving in or on Sand

- Sand and sand dune riding is a unique experience. On sand dunes it is advisable to equip the ROXOR with an antenna type safety flag.
- When riding on sand dunes, proceed cautiously if you see another safety flag and remember vehicles can approach you from any direction.
- Slow down and avoid abrupt steering inputs to prevent sliding and roll overs, especially on hills.
- Hard accelerations on these surfaces may result in loose material to be thrown rearwards into the path of others.
- Hard accelerations may result in tire spin, the ROXOR to sink, eventually becoming stuck.
- Use lower gears and/or 4WD Low Range to help prevent tire spin.

18.5 Driving in or on Snow or Ice

- Be aware that snow cover may hide obstacles like holes and logs that can affect the ROXOR's traction and stability.
- Before driving on frozen waterways, check the ice thickness to ensure it will safely support the weight of the ROXOR.
- Always keep controls, pedals and floor board free of snow and ice to prevent loss of control.
- Slow down and avoid abrupt steering and throttle inputs to prevent sliding and roll overs.
- Use lower gears and/or 4WD Low Range to help prevent tire spin.
- Be aware that it may take longer to stop your ROXOR, be cautious and avoid locking the brakes.
- To prevent snow and ice accumulation on brake pads and discs, which may affect the response time of the braking system, periodically apply the brakes.

18.6 Driving on Hills and Slopes

- Avoid parking on slopes, if unavoidable, put the shift lever in gear, set the parking brake and block the tires.
- Approach the tops of hills with caution to avoid a collision with vehicles coming from the other direction.
- It may be necessary to check the terrain conditions on the opposite side of a hill before proceeding because the ROXOR can ascend steeper slopes than it can descend.
- Never attempt to turn the ROXOR around on hills and slopes.
- Use lower gears and/or 4WD Low Range to help prevent tire spin.
- While the ROXOR has extremely good traction for ascending steep slopes, it is possible to tip over before losing traction.
- Always keep the transmission in gear when descending hills and slopes and choose a gear that will help control your descent.

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18.7 Side Hilling

- Side hilling or driving across a slope should be avoided whenever possible.
- Use extreme caution and avoid obstacles that can raise the uphill side of the vehicle, this increases the potential for a roll over.
- Be aware of slippery or unfirm surfaces which can cause uncontrollable slides and steer downhill to reduce the chance of a roll over.

WARNING *Be aware that cargo can change the center of gravity affecting the vehicles stability and increasing the risk of a roll over. Cargo can also shift causing the pedals to become stuck thereby causing a loss of control.*

18.8 Drop Offs

- The ROXOR is not designed to traverse a sheer downward slope, cliff or drop off.
- If you encounter a sheer downward slope, cliff or drop off, back up and select a different route.
- If the front or rear wheels are driven off this type of terrain it will most likely stop moving or roll over.

DANGER *Attempting to negotiate drop offs as described above may lead to severe injury or death.*

18.9 Crossing Obstacles

- It is best to avoid obstacles whenever possible.
- Operator/Passenger should grip steering wheel/handhold firmly and keep feet on the floor during all crossings.
- Never try to cross obstacles that are higher than the ground clearance (9") of the ROXOR.
- Adjust your speed without losing momentum and try to approach obstacles head on.
- Be aware that obstacles can be slippery and even move while crossing them.

CAUTION *Under rough trail conditions or when crossing an obstacle, the steering wheel could suddenly jerk in one direction or the other. Grip the steering wheel with both hands, without having thumbs wrapped around the steering wheel. Hand and/or wrist injuries may occur if the thumbs are wrapped around the steering wheel.*

18.10 Crossing Shallow Water

- Water crossings present a unique set of hazards, hidden obstacles, holes and changes in water depth can cause a loss of traction, even float the vehicle and cause it to topple over.
- The water depth for this vehicle should not exceed 12 in. (30 cm) or roughly the center point of the standard OEM wheels.

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- Check the water depth, and strength and direction of current, before you attempt to make a water crossing.
- Cross at right angles at a point where the stream bed is straight and uniform.
- Never enter the water at high speed, proceed slowly and cautiously watching for obstacles underneath the surface.
- Water will affect the braking ability of your vehicle, always apply the brakes several times after leaving the water to dry and test them.

NOTICE *It is your responsibility to check your local laws related to water crossings. Some rivers and streams are protected from activities like this.*

18.11 Crossing Public Streets, Roads, or Highways

- Obey all sign and traffic signals.
- Do not proceed if complete visibility in both directions is hindered.
- Choose an exit point on other side of road, then wait for oncoming traffic to pass.
- Drive in a straight line, do not make sharp turns or sudden accelerations.

18.12 Driving on Pavement

- The ROXOR is designed and manufactured for off road use only.
- The ROXOR has been designed and validated to ANSI/ROHVA standards on paved surfaces.
- The ROXOR is not equipped or legal to operate on public streets, roads or highways.
- If you must drive on pavement, turn gradually, go slowly, and avoid abrupt acceleration and braking.

⚠WARNING *The ROXOR does not conform to Federal Motor Vehicle Safety Standards (FMVSS) or US EPA on- highway exhaust emissions regulations. And as such, does not have important features and equipment that on road vehicles have, like brake lights and airbags. Driving on public streets, roads or highways without these important features and equipment can lead to severe injury, including death.*

18.13 Group and Distance Riding

- Driving off-road in a group of vehicles can be a lot of fun, it can also be very dangerous if you do not trust the judgment of those around you.
- Never use the ROXOR or group ride when you, or members of your group, have been consuming or are under the influence of drugs or alcohol, or when feeling tired or ill. These effectively slow your reaction time and impair judgment.

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- Respect the rights, skills and limitations of others by keeping a safe distance and yielding the right of way to other riders.
- When driving off-road, stay to the right of the trail especially around corners and over hills, do not zigzag, and do not assume no other vehicles are on the trail.
- Check the local laws where you plan to ride. The ROXOR may be prohibited from sharing snowmobile trails, cross country ski trails, equestrian trails, hiking trails, mountain bike trails or other public parks and trails.
- Always be prepared to stop quickly and/or pull off the side of the trail if another vehicle appears in front of you.
- Always tell someone where you are planning to go and when they should expect you back.
- Always consider bringing additional clothes, tools, emergency equipment and a first aid kit, and checking the local weather report.
- Find out where you can get additional fuel.

⚠WARNING *When group riding, be aware that others in your group may not have safety equipment, like turn signals or brake lights. Always keep a safe distance between vehicles.*

18.14 Environment

- Always practice the "Leave no Trace" and "Tread Lightly!®" principles and ethics of outdoor conservation. Always respect nature and the rights of others to enjoy it.
- Always get the permission of landowners before riding on private land, respect property lines, crops and farm animals.
- Never drive your ROXOR in environmentally sensitive areas, through wetlands, muskeg or tall grass and do not pollute rivers, streams and lakes.
- Never use your ROXOR to chase wildlife as they can die from exhaustion. In many areas this activity is illegal.
- It is possible to encounter wildlife while driving off-road, stop and observe quietly from a distance.
- The ROXOR can develop exhaust and/or other engine hot spots on long rides, debris build up in these areas resulting in wildfires if this debris ignites and falls off. Periodically check these areas before, during and after your ride.

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19 MOVING LOADS AND DOING WORK

19.1 Working with Your ROXOR

A variety of accessories are available from your ROXOR authorized dealer that can aid you in your work efforts. Contact your local dealer to learn more about the cost and availability of these accessories. Be sure to read and follow the instructions, warnings and limitations of those accessories before using them to do work. Also familiarize yourself with the weight and load limits of the Mahindra ROXOR Offroad Side x Side to avoid having a limited warranty claim denied due to improper use.

⚠WARNING *Every hauling, pulling or winching situation has the potential for personal injury or death. Make sure anyone using the ROXOR to do work reads and comprehends the safety instructions outlined in this section.*

19.2 Weight & Load Limits

Gross Vehicle Weight (GVW)	3,750 lbs.	1,701 kg
Estimated Base Curb Weight	3,035 lbs.	1,377 kg
Maximum Vehicle Load Capacity	715 lbs.	324 kg
Maximum Rear Cargo Weight	349 lbs.	158 kg
Maximum Towing Capacity	3,490 lbs.	1,583 kg
Maximum Tongue Weight	349 lbs.	158 kg
Maximum Person Capacity	2	

19.3 Loading the Rear Cargo Area

When loading cargo into the ROXOR, position the cargo toward the front and center of the cargo area, and as low as possible. Verify the tailgate is latched before operating.

High heavy loads can change the center of gravity of the ROXOR increasing the potential for a roll over. Be aware that carrying liquid loads can add an additional hazard. Avoid carrying loads that block your ability to see or increase your blind spots.

Use only the tie downs provided to secure a load in the rear cargo area, never secure a load to the Rollover Protective Structure (ROPS) except at the two approved tie down points provided, one at the base of each center side support.

⚠WARNING *Loads that are not properly secured can become projectiles when stopping, turning or in an accident causing damage to the ROXOR, as well as severe injury and death to the operator, passenger and/or bystanders.*

NOTICE *Never exceed the Maximum Rear Cargo Weight of 349 lbs. (158 kg) as mandated by the EPA.*

19.4 Carrying Loads

Be aware that handling and stability will be affected when carrying loads. Slow down, turn gradually and avoid hills and rough terrain. Also, be cautious coming to a stop as the braking distance of the ROXOR may increase with a load, especially on down hill slopes.

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Never exceed the maximum vehicle load capacity as listed. Bear in mind that the weight of the operator and passenger, any cargo, all accessories added to the base ROXOR and trailer tongue weight are all included in this maximum vehicle load capacity value of 715 lbs.

⚠WARNING *Loads that are not properly secured can become projectiles when stopping, turning or in an accident causing damage to the ROXOR, as well as severe injury and death to the operator, passenger and/or bystanders.*

⚠WARNING *Be aware that cargo can change the center of gravity affecting the vehicles stability and increasing the risk of a roll over. Cargo can also shift causing the pedals to become stuck thereby causing a loss of control.*

19.5 Hauling and Pulling Loads

When hauling a load or pulling a trailer, respect the maximum vehicle load capacity of the ROXOR. Only use the trailer hitch (if installed) or winch (if installed) to pull a load. Never try to pull the ROXOR by wrapping chains or straps around its axles, cargo tie downs or ROPS. Know the Working Load Limit (WLL) of the strap, chain or cable you are using. Never stand in the recoil or snap back area, this is the area that the strap, chain or cable could reach when "snapping back" if a failure (break) occurs.

When using straps, chains or cables for pulling, cautiously remove any slack without jerking the load. A sudden jerk on the load can damage the chain, cable and/or vehicles. Be sure to maintain tension on the load throughout the hauling process.

When pulling another vehicle, the previously mentioned principles still apply. This activity also requires someone to control the vehicle being pulled. Slow down and use hand signals to communicate if necessary and allow more distance for stopping. Never attempt to pull another vehicle without an operator controlling it.

Before hauling or pulling a load or a trailer be sure to read the manufacturer's instructions and warning. Never exceed the manufacturer's maximum load capacities. Always make sure the trailer load is evenly distributed and secured. An evenly balanced trailer is easier to control. Make sure there is sufficient tongue weight to prevent a loss of traction at the rear wheels.

⚠WARNING *It is your responsibility to make sure the hitch on the ROXOR and the hitch on the trailer are compatible. Never exceed the manufacturer's maximum load capacity of the trailer, hitch or the capacity and limitations of the ROXOR. The trailer and/or hitch could fail under the excess load and break away from the ROXOR resulting in personal injury or death.*

⚠WARNING *Driving off-road while pulling a trailer substantially increases the risk of a roll over, especially on uneven terrain and slopes. Be aware that if the trailer is involved in a rollover, it may force the ROXOR to follow, resulting in personal injury or death.*

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20 TRANSPORTING

If your ROXOR needs to be transported, it should be carried on a flat-bed trailer of the proper size and capacity. Refer to section **26.2 Vehicle Specifications**.

Use the images provided to help properly secure the ROXOR to the trailer. At a minimum, the ROXOR should be secured in this manner at all four corners, with suitable straps and/or chains, and crossed as shown to help prevent lateral shifting during transport. (See **Figure 4** & **Figure 5**)

At the time of this release, dolly and tow bar towing is not recommended. Check with your ROXOR authorized dealer for any updates on this subject.

⚠WARNING *Use extreme caution when securing the axles, do not wrap straps or chains completely around the axles, so as not to damage the brake lines resulting in severe injury or death.*

⚠WARNING *Make sure no loose objects are present inside the ROXOR or in the rear cargo area during transportation as they can be lost or worse become projectiles. Never trailer the ROXOR backwards, always trailer it facing forward. The windshield (if equipped) could break away, be lost or worse become a projectile resulting in severe injury or death.*

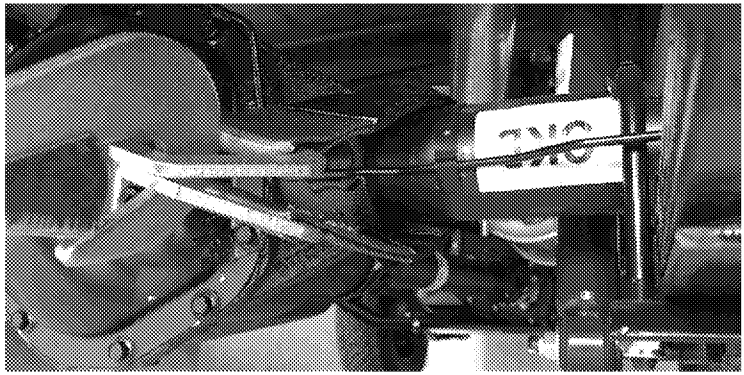

Figure 4. Straps around axles

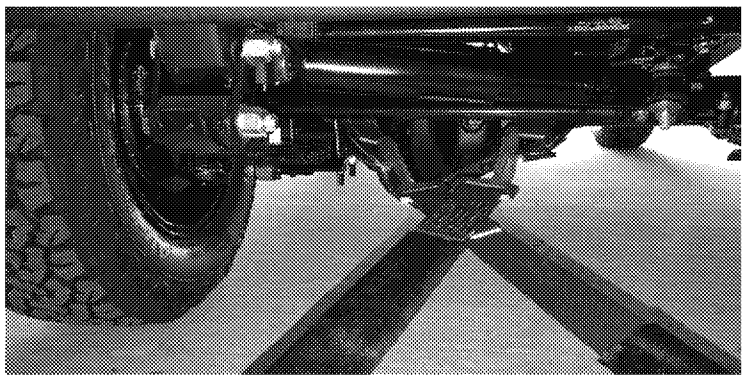

Figure 5. Straps to trailer tie downs

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21 LIFTING AND SUPPORTING

Place the ROXOR on a flat, non-slippery surface. For hydraulic jack lifting, place the hydraulic jack under the center of the axle only. Once lifted, support the ROXOR with suitable jack stands positioned under the right and left frame rails. If lifting just the front, or just the back, be sure to block the opposite wheels using rocks, logs or wheel chocks.

For hoist lifting, only use the two front locations (see **Figure 6**) and the two rear locations (see **Figure 7**) shown here.

⚠WARNING *Verify the unit is stable on the hoist before raising all the way up and going underneath it to help prevent an accident resulting in severe injury or death.*

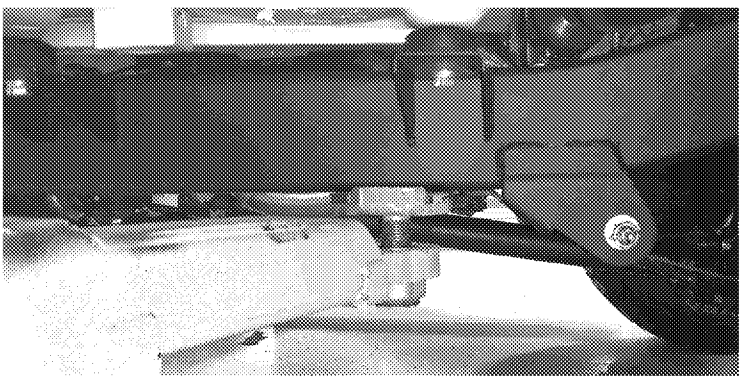

Figure 6. Front Lifting Location

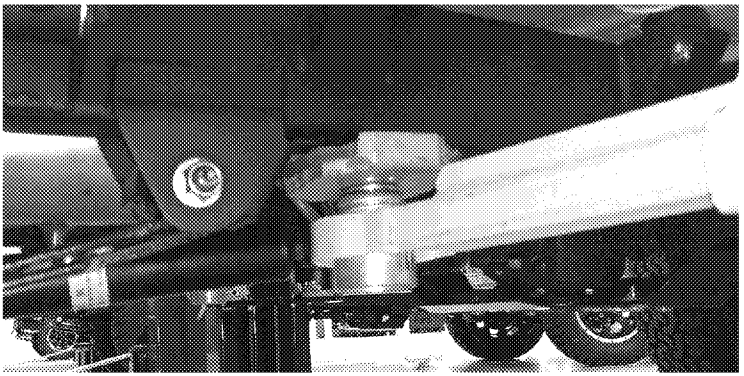

Figure 7. Rear Lifting Location

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22 MAINTENANCE

Keep your ROXOR in safe operating condition by performing the regular maintenance as scheduled. Refer to section **22.2 Scheduled Maintenance Chart**.

As required by the EPA we must inform you that a repair shop or person of the owner's choosing may maintain, replace, or repair emission control devices and systems. You are not require to purchase components or services from a ROXOR authorized dealer, although a ROXOR authorized dealer has an in-depth technical knowledge and tools to service the Mahindra ROXOR Offroad Side x Side.

The emission related limited warranty is not conditioned on the use of a ROXOR authorized dealer or any other establishment with which Mahindra has a commercial relationship. For more information, refer to section **28.2 U.S. EPA Emission-Related Limited Warranty (Canada Excluded)**. Proper maintenance is the owner's responsibility. A warranty claim may be denied if, among other things, the owner or operator caused the problem through improper maintenance or use. You must follow the instructions for fuel requirements in section **14.1 Fuel Requirements**.

⚠WARNING *Failure to properly maintain the vehicle according to the maintenance schedule and procedures provided in this section can make the ROXOR unsafe to operate resulting in severe injury or death.*

22.1 Severe Dusty Conditions

Air filter maintenance should be adjusted according to riding conditions. Air filter maintenance must be increased in frequency in the following dusty conditions:

- Riding on dry sand
- Riding on dry dirt covered surfaces
- Riding on dry gravel roads or similar conditions

⚠CAUTION *Riding in a group in these conditions would increase the air filter maintenance even more.*

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22.2 Scheduled Maintenance Chart

Perform each maintenance procedure at the interval that occurs first for each item.

Item		Maintenance Interval (Use interval that occurs first for each item)			Maintenance Procedure
		Hrs of ATV/SCAR Operation	Calendar	Miles (Km)	
A = It is recommended that the maintenance procedure be performed by an **Authorized Mahindra Dealer/Service** facility. **S** = For ATVs subjected to **Severe use**, perform the maintenance procedure more frequently than the recommended intervals.					
–	Fuel Filter; Water Separator	50 Hrs	–	400 (640)	**NORMAL USE WITH HIGH QUALITY FUEL:** • Drain every 50 hours. **SEVERE USE OR USING POOR QUALITY FUEL:** • Drain **DAILY**. • Replace as needed.
S	Engine Oil and Filter (break-in)	50 Hrs	6 M	1500 (2500)	• Replace oil and oil filter.
S	Air Intake System; Air Cleaner/Filter	100 Hrs	–	3000 (5000)	• Inspect for debris or oil. • Clean or replace, as needed.
–	Battery	100 Hrs	12 M	3000 (5000)	• Inspect terminals for corrosion or loose connectors. Clean and test.
–	Drive Shaft	100 Hrs	12 M	3000 (5000)	• Lubricate.
S	Engine Oil and Filter	100 Hrs	12 M	3000 (5000)	• Replace oil and oil filter.
–	Exhaust Pipe	100 Hrs	12 M	3000 (5000)	• Inspect for corrosion or damage. Repair as needed.

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Item		Maintenance Interval (Use interval that occurs first for each item)			Maintenance Procedure
		Hrs of ATV/SCAR Operation	Calendar	Miles (Km)	
A = It is recommended that the maintenance procedure be performed by an **Authorized Mahindra Dealer/Service** facility. **S** = For ATVs subjected to **Severe use**, perform the maintenance procedure more frequently than the recommended intervals.					
S	Lubrication, General	100 Hrs	12 M	3000 (5000)	• Lubricate all fittings, pivots, cables, etc.
S	Radiator and Cooling Fan (s)	100 Hrs	12 M	3000 (5000)	• Inspect radiator for damaged fins or debris obstructing airflow. Repair or replace, as needed. • Inspect fan for damage. Repair or replace, as needed. • Clean external surfaces. • Pressure test the system.
A	Shift Linkage	100 Hrs	12 M	3000 (5000)	• Lubricate. • Adjust as needed.
A	Steering	100 Hrs	12 M	3000 (5000)	• Lubricate. • Adjust or repair, as needed.
S	Suspension, Front/Rear	100 Hrs	12 M	3000 (5000)	• Lubricate.
S	Turbo Oil Lines	100 Hrs	—	3000 (5000)	• Inspect for leaks or loose fittings. Repair as needed.
A	Wheel Bearings	100 Hrs	12 M	3000 (5000)	• Inspect for wear. Repair as needed.
—	Wiring	100 Hrs	12 M	3000 (5000)	• Inspect for wear, routing, or loose or worn connections. Repair or replace, as needed. • Apply dielectric grease to connectors subjected to water, mud, etc.
A	Brake Fluid	300 Hrs	36 M	9000 (15 000)	• Replace fluid.

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Item		Maintenance Interval (Use interval that occurs first for each item)			Maintenance Procedure
		Hrs of ATV/SCAR Operation	Calendar	Miles (Km)	
A = It is recommended that the maintenance procedure be performed by an **Authorized Mahindra Dealer/Service** facility. **S** = For ATVs subjected to **Severe use**, perform the maintenance procedure more frequently than the recommended intervals.					
–	Fuel System	300 Hrs	36 M	9000 (15 000)	• Inspect lines and fittings for leaks and abrasions. Replace or repair as needed. • Cycle key to pressurize fuel pump.
S	Gearcase Oil, Front and Rear	300 Hrs	36 M	9000 (15 000)	• Replace fluid.
S	Power Steering Fluid	300 Hrs	36 M	9000 (15 000)	• Replace fluid.
S	Transfer Case Oil	300 Hrs	36 M	9000 (15 000)	• Replace fluid.
S	Transmission Oil	300 Hrs	36 M	9000 (15 000)	• Replace fluid.
–	Spark Arrester	300 Hrs	36 M	9000 (10 000)	• Clean.
A	Suspension Bushings	300 Hrs	36 M	9000 (15 000)	• Inspect for wear. Replace as needed.
A	Accessory Belt(s)	–	60 M	–	• Inspect for wear or damage. Replace as needed.
S	Engine Mounts	–	60 M	–	• Inspect for wear or damage. Replace as needed.
S	Coolant	–	60 M	–	• Replace fluid.
A	Valve Timing/Clearance	–	60 M	–	• Adjust as needed.
A/S	Auxiliary/Parking Brake	As needed			• Adjust or replace as needed.
A/S	Brake Drums and Pads	As needed			• Inspect for excess wear. Replace as needed.
–	Headlight Aim	As needed			• Adjust as needed.

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Item		Maintenance Interval (Use interval that occurs first for each item)			Maintenance Procedure
		Hrs of ATV/SCAR Operation	Calendar	Miles (Km)	
A = It is recommended that the maintenance procedure be performed by an **Authorized Mahindra Dealer/Service** facility. **S** = For ATVs subjected to **Severe use**, perform the maintenance procedure more frequently than the recommended intervals.					
A	Wheel Alignment; Toe Adjustment	As needed AND during routine maintenance			• Adjust as needed AND whenever parts are replaced during routine maintenance.

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23 MAINTENANCE PROCEDURES

23.1 Maintenance Tips and Precautions

Observe the following tips and precautions when performing maintenance on the ROXOR.

- Always wear eye protection and gloves.
- Stay clear of rotating parts when engine is running.
- Stay clear of hot parts, before during and after maintenance.
- Avoid repeated contact with fluids.
- Do not allow fuel, coolant and other fluids to spill over electrical and hot parts.
- Before removing parts for maintenance, it is best to clean the outer surface of the parts being replaced.
- Care must be taken when handling the air intake system components. Never lift by using their hoses or pipes.
- Ensure that hoses and lines are oriented in their correct position before tightening the clamps.
- Hoses and lines must not be subjected to any twists or stress.
- Ensure that all clips and supports are replaced.
- Never run the engine in an enclosed area. Exhaust contains carbon monoxide which can cause loss of consciousness or death in a very short time.
- Check to make sure the engine is off and parking brake set before jacking up the vehicle.
- Never go under the vehicle while it is inclined without proper bracing (approved jack stands).

23.2 Aim Headlamps

Not included in regular maintenance.

Maintenance Interval – As required

23.3 Clean Spark Arrester

Do not perform service on the spark arrester while the system is hot. Exhaust systems can reach extreme temperatures. Allow components to cool sufficiently before proceeding. Remove any combustible materials from around the spark arrester.

Maintenance Interval – Clean every 300 hours, 36 months, 9,000 miles (15,000 Km)

1. Place the transmission in Neutral and set the Parking Brake.
2. Remove the spark arrester clean-out plug located on the bottom of the muffler. (see **Figure 8**)
3. Start the engine.
4. Press and hold the brake pedal, then momentarily rev the engine several times to increase engine RPM. This will help purge accumulated carbon from the system.

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5. If carbon is expelled, partially cover the exhaust outlet and rap on the pipe around the clean-out plug while revving the engine several more times.
6. If particles are still suspected to be in the muffler. Block the rear wheels, then elevate the front of the ROXOR one foot higher than the rear. Ensure parking brake is set.
7. Repeat steps 4 and 5 until no more particles are expelled when the engine is revved.
8. Stop the engine. Allow the arrester to cool.
9. Reinstall the spark arrester clean-out plug.

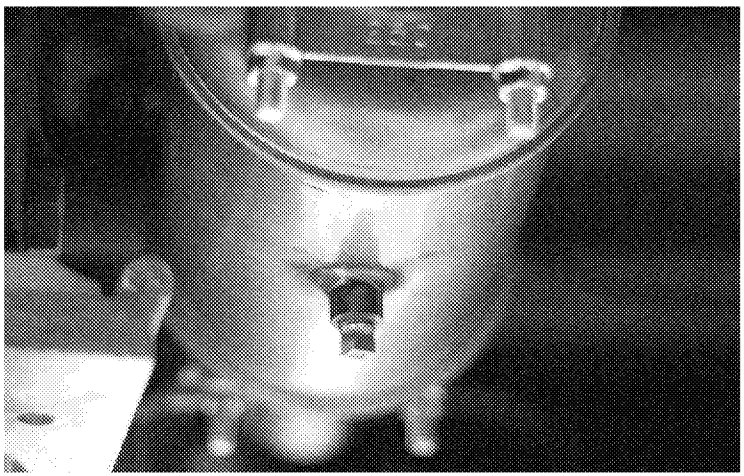

Figure 8. Spark Arrester Clean-Out Plug

23.4 Clean and Inspect Brakes

Brake maintenance is important, not only for the obvious safety reasons, but also to help preserve the wear components.

The brake system consists of six main components that should be inspected and/or cleaned. They are the brake pads, rotors, calipers, drums, brake lines, and master cylinder.

The wheels and tires should be remove to perform this procedure properly. Refer to section **21 Lifting and Supporting** for instruction.

Maintenance Interval – Clean and inspect every 100 hours, 12 months, 3,000 miles (5,000 Km)

1. Check the brake system for fluid leaks.
2. Check the brake pedal for excessive travel or a spongy feel.
3. Clean and inspect the pads for wear, damage and looseness.
4. Clean and inspect the brake discs and drums for signs of cracks, excessive wear or corrosion, warping or other damage.
5. Clean any grease using an approved brake cleaner or alcohol.

⚠WARNING *Do not apply rust inhibiting penetrating oil or other petroleum based products to brake discs and drums. This could render your braking system inoperable resulting in severe injury or death.*

NOTICE *Generally, there should be at least a 1/4" (6.4 mm) of brake pad. If you see less than this, you may want to replace the pads.*

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23.5 Check Brake Fluid Level & Leak Check

Inspect the level of the brake fluid before each operation and look for leaks if the brake fluid is found to be low. The brake fluid reservoir is located at the rear of the engine bay on the driver's side.

Maintenance Interval – Check regularly, replace the brake fluid every 300 hours, 36 months, 9000 miles (15,000 Km)

Fluid Spec. – Only use DOT 3.

1. Position the ROXOR on a flat level surface.
2. Verify the engine is off and parking brake set.
3. Unlatch and lift the hood, then place prop rod.
4. View the brake fluid level on the side of the brake fluid reservoir.
5. The brake fluid level should be between the upper MAX and lower MIN level lines. (see **Figure 9**)
6. If the brake fluid level is lower than the MIN level line, remove the cover by pulling it straight up, then add brake fluid until the fluid level is near the MAX line.
7. Reinstall the cover then apply pressure to the brake pedal for a few seconds, next check for fluid leakage around the six main components and their fittings.

⚠WARNING *After opening a bottle of brake fluid, always discard any unused portion. Never store or use a partial bottle. Brake fluid is hygroscopic, meaning it rapidly absorbs moisture from the air. The moisture results in the boiling temperature of the brake fluid to drop, which can lead to early brake fade and result in severe injury or accidents.*

NOTICE *Replace brake fluid any time the fluid becomes contaminated, or the type and brand of the fluid in the reservoir is unknown to prevent system damage.*

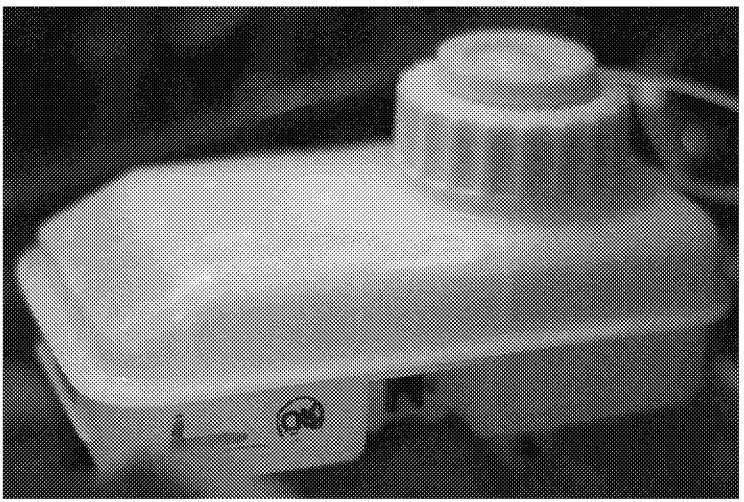

Figure 9. Brake Fluid Reservoir

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23.6 Check Differential Oil Levels & Leak Check

Before checking the front and rear differential oil levels, warm them up. This is done by driving the ROXOR for 10-15 minutes.

Only perform when the ROXOR is on level ground or support. Do not use an impact wrench to remove the differential oil level plugs, this may damage the threads in the differentials resulting in a leak.

Maintenance Interval – Replace every 300 hours, 36 months, 9,000 miles (15,000 Km)

Fluid Spec. – GL-5 SAE 80W-90

Capacity – 1.6 Quarts (1.5 Liters)

1. Clean the differential oil level plugs and surrounding area.
   a. Front Oil Level Plugs (see **Figure 10**)
   b. Rear Oil Level Plugs (see **Figure 11**)
2. Remove the check/fill oil level plug and check whether oil is dripping out.
3. If oil is not dripping out, oil level must be below the required level.
4. Add specified oil to bring it to the level when it starts dripping out.
5. Install and tighten the oil level plug.

Figure 10. Front Oil Level Plugs

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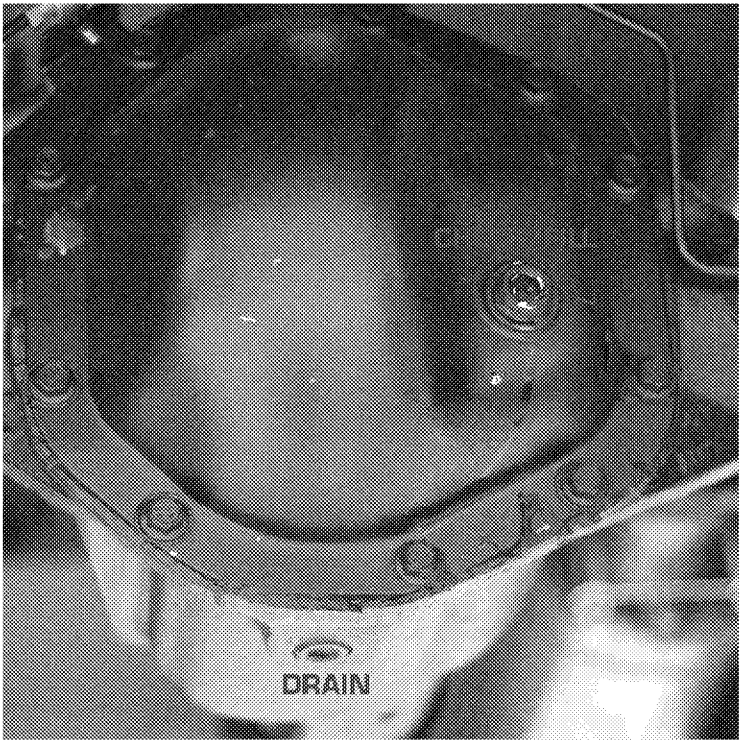

Figure 11. Rear Oil Level Plugs

23.7 Check Engine Coolant Level & Leak Check

The engine coolant level should be checked when the engine is at ambient (room) temperature. Maintain the coolant level between the HIGH and LOW lines on the coolant overflow bottle (see **Figure 12**). If a leak is suspected, open the hood and check the radiator, radiator hoses and radiator hoses connected to the engine. Pay close attention to the connection points near the hose clamps. You can also check for coolant on the ground where the ROXOR is parked.

Maintenance Interval – Check regularly, replace every 60 months.

Fluid Spec. – ASTM D3306 or JIS K2234

Capacity – 8.5 Quarts (8.0 Liters)

1. Unlatch and lift the hood, then place prop rod.
2. Use a rag to cover the radiator pressure cap, push down, then slowly turn the cap counter clockwise.
3. View the coolant level through the radiator pressure cap opening. It should be near the top of the opening.
4. If low, use a funnel and slowly add coolant as needed.
5. Reinstall the radiator pressure cap, push down, then slowly turn the cap clockwise.

⚠CAUTION *Never remove the radiator pressure cap while the engine is warm or hot. Always allow the engine to cool before removing the cap as escaping steam can result in burn injuries.*

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NOTICE *Do not replace the OEM radiator pressure cap with a non-standard pressure cap. These will not allow the recovery system to function properly, causing the engine to overheat and a limited warranty claim to be denied. Your ROXOR authorized dealer can provide the correct replacement part.*

Figure 12. Coolant Overflow Bottle

23.8 Check Engine Oil Level & Leak Check

The oil dipstick is located on the passenger side of the engine. Engine oil should be checked on a level surface, with engine cold, or allow time for the oil to drain back into the oil pan before checking level to prevent overfilling.

Maintenance Interval – Check regularly, replace the engine oil every 50 hours, 6 months, 1,500 miles (2,500 Km)

Fluid Spec. – API CJ-4 5W/40 (Full Synthetic)

Capacity – 7.4 Quarts (7.0 Liters)

1. Position the ROXOR on a flat level surface.
2. Stop the engine and allow time to cool.
3. Unlatch and lift the hood, then place prop rod.
4. Remove the dipstick. Wipe it dry with a clean cloth.
5. Reinstall the dipstick, then remove it and check the oil level.
6. Maintain the oil level in the safe range, between the two notches. (see **Figure 13**) Do not overfill.

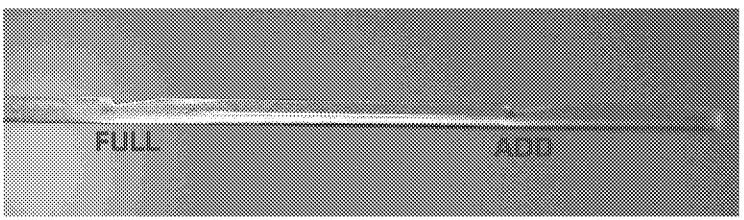

Figure 13. Oil Level Safe Range

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23.9 Check Power Steering Oil Level & Leak Check

The power steering reservoir is in the rear of the engine bay, on the driver's side. The fluid level in the reservoir should be checked on a level surface with the engine OFF to prevent injury from moving parts and to ensure accurate fluid level reading. Use only the power steering fluids recommended to help avoid damage to the power steering system. Replacing the power steering fluid should always be done by a ROXOR authorized dealer.

Maintenance Interval – Check regularly, replace power steering fluid every 300 hours, 36 months, 9,000 miles (15,000 Km)

Fluid Spec. – DEXRON III/Mercon

1. Start the engine and let it run until it reaches normal operating temperature.
2. Put transmission in neutral and set parking brake.
3. Unlatch and lift the hood, then place prop rod.
4. While the engine idles and with power steering cap on, turn the steering wheel lock (left) to lock (right) a couple of times.
5. Turn the engine off.
6. Check the power steering fluid level in the reservoir.
7. The fluid level should be maintained between the MIN and MAX lines on the side of the power steering fluid reservoir. (see **Figure 14**)
8. If the fluid is low, add fluid in small amounts, remember to replace the cap and repeat steps 2 through 4.
9. Continue to follow these steps until the level reaches the correct operating range.
10. Always check for leaks if the fluid level cannot be maintained.

⚠WARNING *Driving the ROXOR with power steering fluid below the minimum mark will damage the steering system which would void all of your warranty coverage.*

NOTICE *Clean spillage from all exposed surfaces with a clean cloth to prevent surface damage.*

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Figure 14. Power Steering Fluid Level

23.10 Check Tire Pressure

Keep tires properly inflated. Proper tire inflation pressure is essential to the safe and satisfactory operation of your ROXOR. Four primary areas are affected by **improper** tire pressure:

1. Safety
2. Stability
3. Ride Comfort
4. Fuel Economy

It is recommended to check your tire pressure (including spare if equipped) when the tire is cold. The recommended cold tire pressure is **28 psi**. If the tire pressure is not correct, drive slowly to the nearest service station and inflate to the recommended specification. If the pressure is above 60 psi, adjust it until it is correct. Always reinstall the valve stem cap after checking or adjusting tire pressure.

Your ROXOR is originally equipped with tires supplied by a reputable manufacturer. If you ever have questions regarding your tires, please refer to the tire warranty and literature supplied by the tire manufacturer. You may also contact the tire manufacturer directly or Mahindra.

The originally equipped tire size supplied with the ROXOR is 235/70R16.

⚠WARNING *Improperly inflated tires can adversely affect handling or fail unexpectedly, resulting in an accident and/or personal injury. Always inflate to the recommended 28 psi.*

⚠WARNING *Never overload your ROXOR. Overloading can result in tire failure, affect handling, and increase your stopping distance, resulting in an accident and/or personal injury.*

NOTICE *Lost valve stem caps should be replaced as soon as possible. Missing valve stem caps allow dirt and moisture to get into the valve stem core and result in air leakage.*

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23.11 Check Transfer Case Oil Level & Leak Check

Before checking the transfer case oil, it should be warmed up by driving the ROXOR for 10-15 minutes.

Only perform when the ROXOR is on level ground or support. Do not use an impact wrench to remove the transfer case oil level plugs. This may damage the threads in the transfer case resulting in a leak.

Maintenance Interval – Replace every 300 hours, 36 months, 9,000 miles (15,000 Km)

Fluid Spec. – GL-4 SAE 80W90

Capacity – 1.7 Quarts (1.6 Liters)

1. Clean the transfer case oil level plug and surrounding area. (see **Figure 15**)
2. Remove the transfer case oil level plug and check whether oil is dripping out.
3. If oil is not dripping out, oil level must be below the required level.
4. Add specified oil to bring it up to the level that it starts dripping out.
5. Install and tighten the oil level plug.

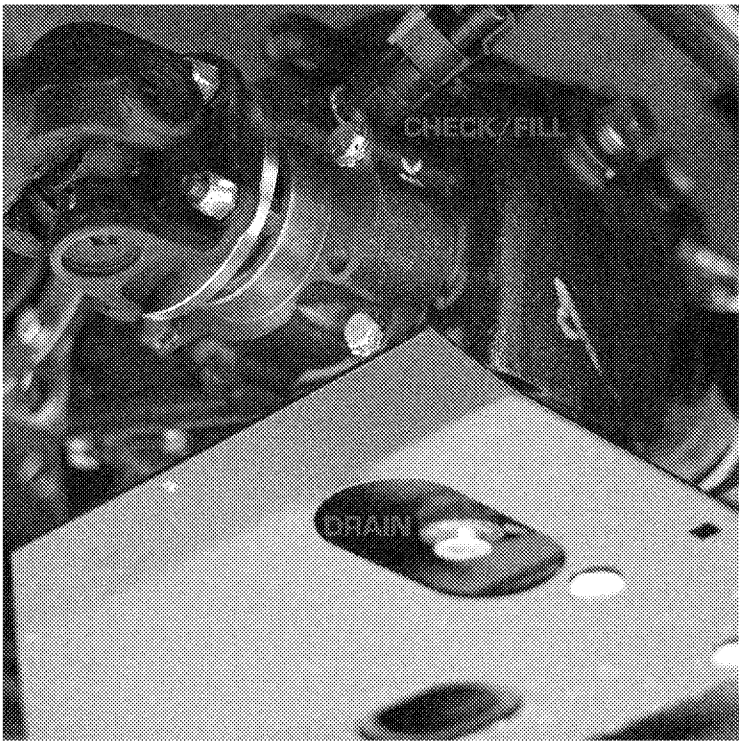

Figure 15. Transfer Case Oil Level Plug

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23.12 Drain Fuel/Water Separator

A water in fuel indicator light is provide in the multifunction gauge on the dash panel. Follow the steps below to drain the fuel/water separator and turn off the indicator light.

This device is located on the driver's side of the engine bay, behind the headlight and radiator support. (see **Figure 16**)

Maintenance Interval – Check regularly, drain every 50 hours, 400 miles (640 Km)

1. Place a catch basin under the water/fuel separator.
2. Turn the fuel drain petcock counter clockwise until water begins to come out. (see **Figure 17**)
3. Turn the petcock clockwise to stop the flow of diesel fuel.

WARNING *Wear protective gloves and OSHA approved eye protection when performing this procedure to help prevent injury.*

NOTICE *Clean fuel spilled on exposed surfaces with a clean cloth.*

Figure 16. Fuel/Water Separator Location

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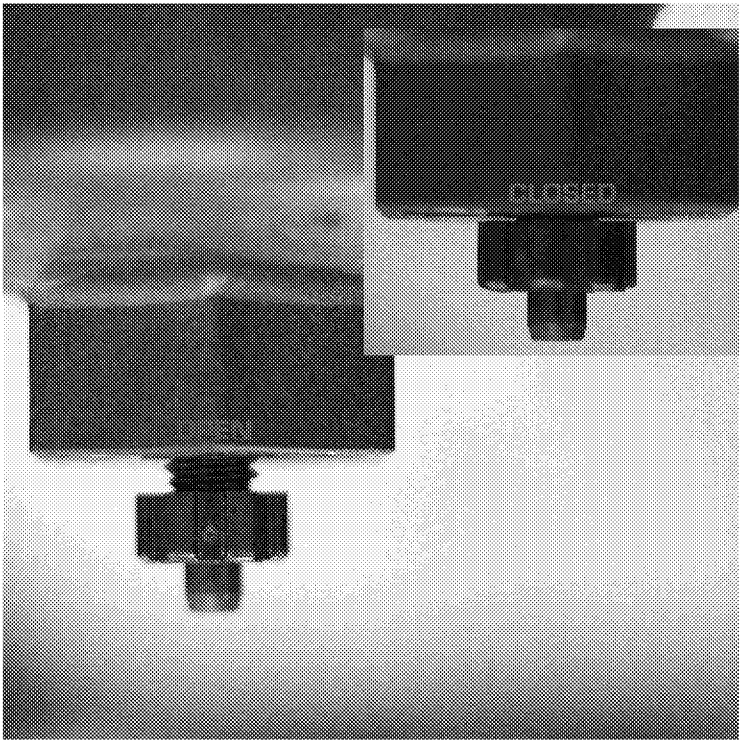

Figure 17. Fuel Drain Petcock

23.13 Lubricate Shift Linkage

Not included in regular maintenance.

Maintenance Interval – When shifting becomes difficult, after excessive water exposure to the undercarriage, or excessive exposure to the effects of salt air. Apply white grease to shift linkage pivot points. (see **Figure 18**)

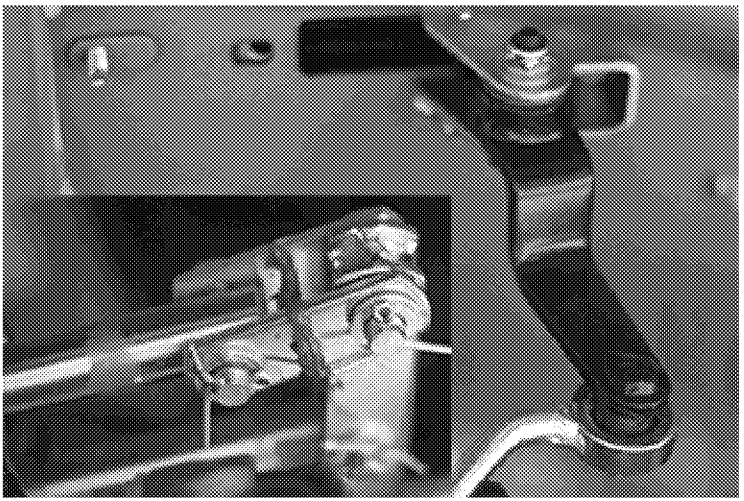

Figure 18. Shift Linkage Pivot Points

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23.14 Replace Alternator Drive Belt

Inspect the alternator drive belt periodically for cracks and abnormal wear. It is a good idea to carry an extra belt, especially as your ROXOR ages, a broken alternator belt can leave you stranded.

Maintenance Interval – Replace every 60 months.

Belt Part Number – 0306GB0022N

1. Position the ROXOR on a flat level surface.
2. Verify the engine is off and parking brake set.
3. Unlatch and lift the hood, then place prop rod.
4. Loosen the jam and adjustment nuts on tension rod. (see **Figure 19**)
5. Move the alternator toward the engine to loosen belt for removal.
6. Remove the old belt, then install the new belt.
7. Tighten the adjustment nut, on tension rod until the belt has about ½" (12.7 mm) of deflection when pushed between pulleys, then tighten jam nut.

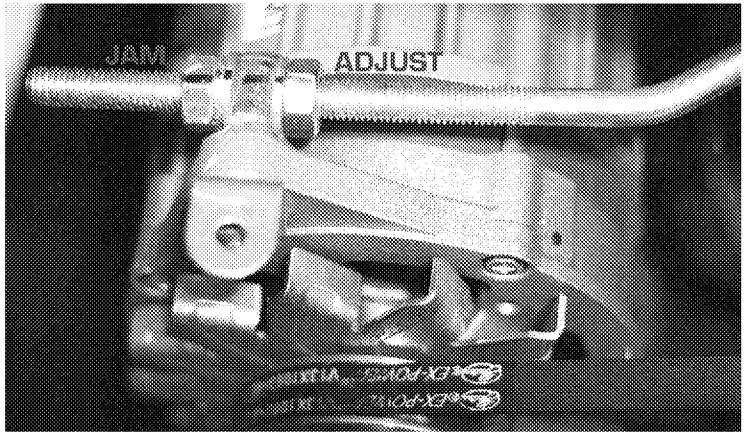

Figure 19. Alternator Adjustment Nut

23.15 Replace Power Steering Drive Belt

Inspect the power steering drive belt periodically for cracks and abnormal wear. It is a good idea to carry an extra belt, especially as your ROXOR ages, a broken power steering belt can leave you stranded.

Maintenance Interval – Replace every 60 months.

Belt Part Number – 0306CAB00101N

1. Position the ROXOR on a flat level surface.
2. Verify the engine is off and parking brake set.

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3. Unlatch and lift the hood, then place prop rod.
4. Loosen the jam nut, then turn the adjustment bolt. Clockwise to tighten, counter clockwise to loosen. (see **Figure 20**)
5. Move the power steering pump toward the engine to loosen belt for removal.
6. Remove the old belt, then install the new belt.
7. Turn the adjustment bolt clockwise, until the belt has about ½" (12.7 mm) of deflection when pushed between pulleys, then tighten jam nut.

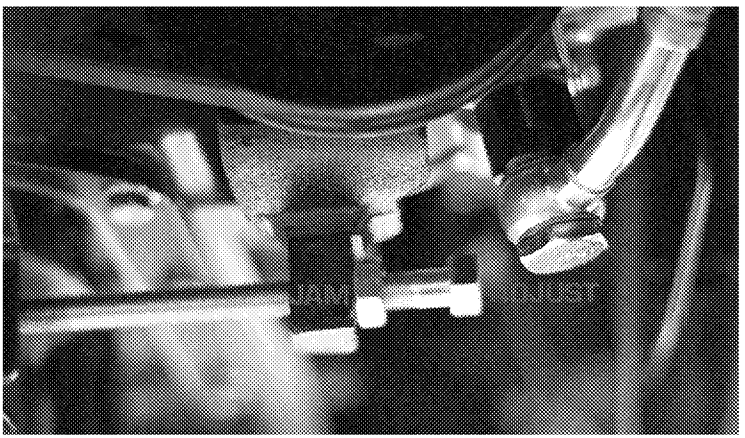

Figure 20. Power Steering Adjustment Nut

23.16 Replace Engine Air Filter

Service the air filter more frequently if the vehicle is operated in dusty conditions. Refer to section **22.1 Severe Dusty Conditions**. Monitor the air filter indicator with engine running only, if the red indicator is visible the filter should be replaced. (see **Figure 21**)

Maintenance Interval – Check regularly, replace every 100 hours, 3,000 miles (5,000 Km)

Filter Part Number – 0313AC0280N

1. Verify the engine is off and parking brake set.
2. Unlatch and lift the hood, then place prop rod.
3. Remove the air filter housing clamp mounting bolt using a 13 mm socket.
4. Swing the air filter housing clamp up and out of the way.
5. Separate the lower air filter housing from the upper air filter housing.
6. Gently remove the air filter by pulling straight out. (see **Figure 22**)

> **NOTICE** *Operating a turbo diesel engine with a soiled or damaged air filter can result in engine damage. Do not attempt to wash the filter. Always replace a soiled or damaged filter with a new filter.*

7. Clean any dirt or deposits from the inside of the air cleaner housings.

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8. Install the new filter into the lower air filter housing, then align arrows on upper and lower housings on re-assembly.
9. Reinstall the air filter housing into cradle and swing clamp into position.
10. Position the air filter housing and tighten the mounting bolt.

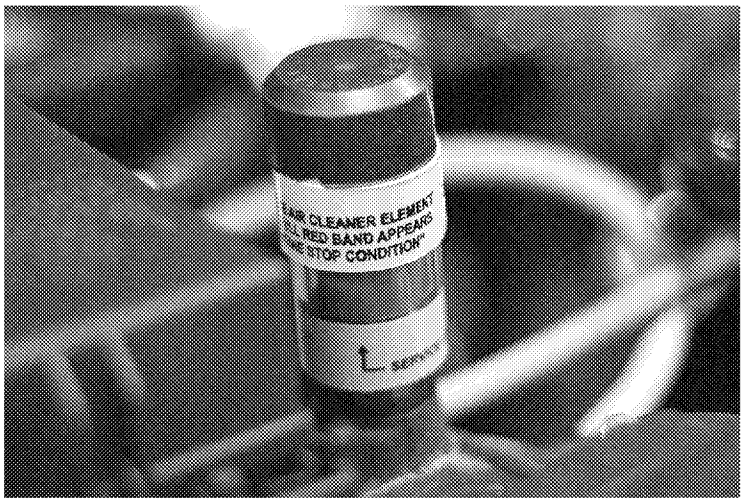

Figure 21. Air Filter Indicator

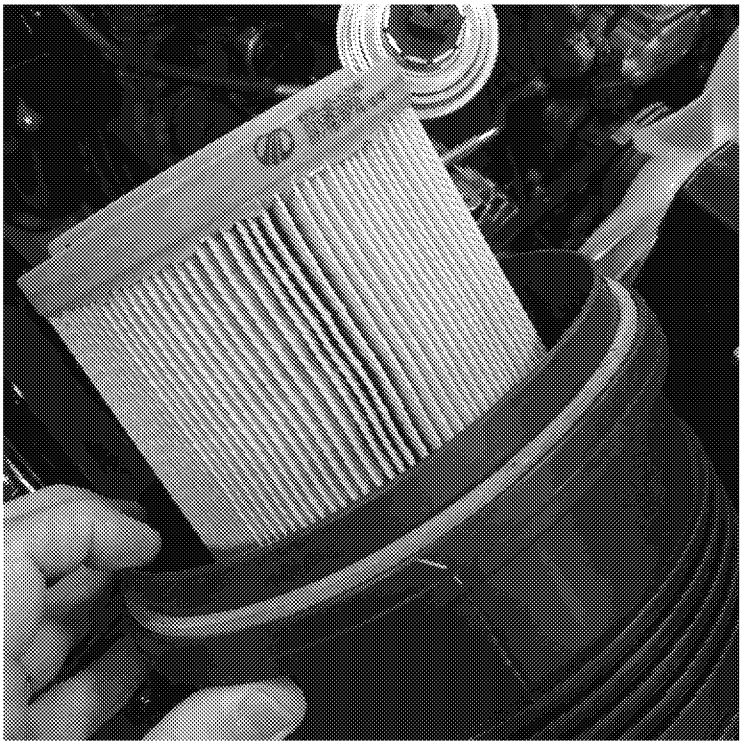

Figure 22. Air Filter Housing

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23.17 Replace Engine Oil and Oil Filter

Always change the oil filter whenever changing oil.

Maintenance Interval – Replace every 50 hours, 6 months, 1,500 miles (2,500 Km)

Fluid Spec. – API CJ-4 5W/40 (Full Synthetic)

Capacity – 7.4 Quarts (7.0 Liters)

1. Position the vehicle on a flat level surface.
2. Run the engine for two to three minutes until warm.
3. Stop the engine, place the gear selector in gear and set the parking brake.
4. Clean the area around the drain plug. (see **Figure 23**)
5. Place a drain pan beneath the engine crankcase.

   ⚠WARNING *Contact with hot oil can result in skin burns. Do not allow hot oil to contact skin.*

6. Remove the drain plug. Allow the oil to drain completely.
7. Verify the sealing washer is on the drain plug. The sealing surfaces on drain plug and crankcase should be clean and free of burrs, nicks or scratches.
8. Reinstall the drain plug. Torque between 30-40 Nm.
9. Place shop towels beneath the oil filter. Using an oil filter wrench, turn the filter counterclockwise to remove it. (see **Figure 24**)
10. Using a clean dry cloth, clean the filter sealing surface on the crankcase. And verify the old o-ring is not stuck to the engine block.
11. Lubricate the o-ring on the new filter with a film of fresh engine oil. Check to make sure the o-ring is in good condition.
12. Install the new filter and turn by hand until the filter gasket contacts the sealing surface, then turn an additional 1/2 turn.
13. Unlatch and lift the hood, then place prop rod.
14. Remove the oil fill cap and add up to 7.4 Quarts (7.0 Liters) of the recommended oil (API CJ-4 5W/40, Full Synthetic).
15. Reinstall the oil fill cap.
16. Start the engine and check for leaks.
17. Stop the engine and wait for 15 seconds before removing the dipstick. Remove the dipstick. Wipe it dry with a clean cloth.
18. Reinstall the dipstick completely. Remove the dipstick and check the oil level.
19. Remove the oil fill cap and add oil as needed to bring the level to the upper mark on the dipstick. Do not overfill.
20. Reinstall the fill cap. Reinstall the dipstick.
21. Dispose of used filter and oil properly.

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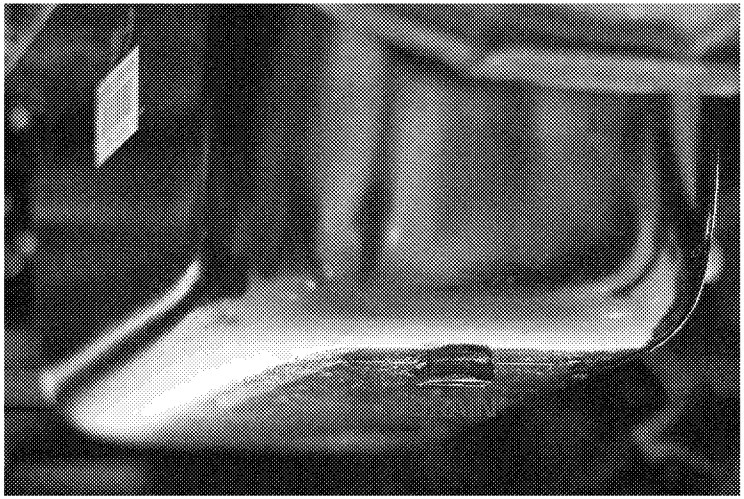

Figure 23. Oil Drain Plug

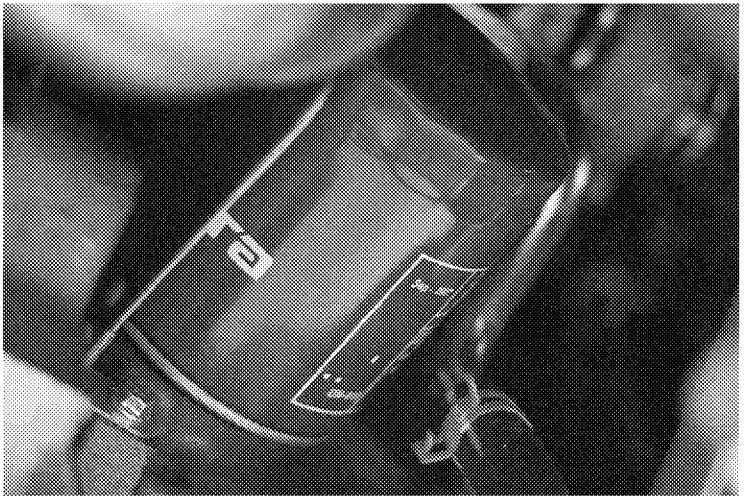

Figure 24. Oil Filter

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23.18 Replace Transfer Case Oil

Maintenance Interval – Replace 300 hours, 36 months, 9,000 miles (15,000 Km)

Capacity – 1.7 Quarts (1.6 Liters)

Fluid Spec. – GL-4 SAE 80W90

1. Clean the oil level plug, drain plug and surrounding area.
2. Place a container to collect oil, under the transfer case.
3. Remove the drain plug.
4. Remove the oil level plug. (see **Figure 25**)
5. Let the oil drain out.
6. Tighten the drain plug.
7. Fill new oil through oil level plug using a funnel until it begins to drip out.
8. Tighten the oil level plug.

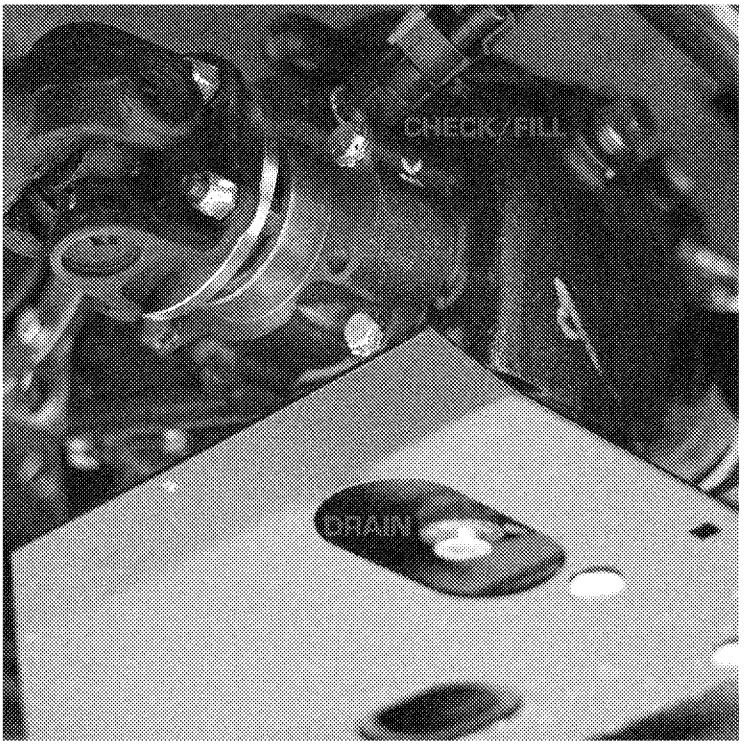

Figure 25. Transfer Drain Plug

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23.19 Rotate Wheels and Tires

When rotating the tires, make sure the ROXOR is on level ground and properly supported. Never place your body or limbs underneath the ROXOR when supported. Follow the rotational pattern below. (see **Figure 26**)

Maintenance Interval – Every other oil change.

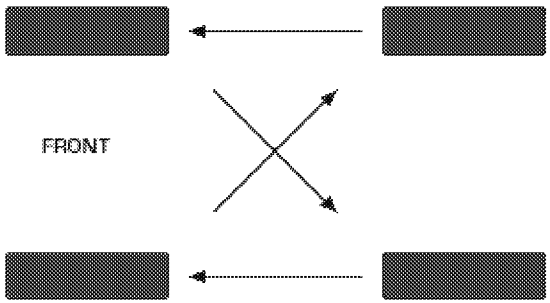

Figure 26. Tire Rotation Pattern

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24 VEHICLE CARE

24.1 Post Operation Care

You should rinse the dirt and debris off of the ROXOR with fresh water at the end of each operating day. Apply a rust inhibiting penetrating oil on unpainted metallic parts, excluding belt pulleys and brake components. When the vehicle is operated in muddy conditions, a complete wash is recommended to help preserve its components.

NOTICE *When the ROXOR is used near salt-water environments, rinsing the vehicle with fresh water becomes more critical. Never use a high-pressure washer to clean.*

24.2 Vehicle Cleaning and Protection

When required, wash with a soft sponge or cloth, warm water and a mild detergent. Use low pressure water only (like a garden hose) for cleaning. High pressure can cause damage to electrical or mechanical components. Certain areas can collect mud and debris, potentially causing abnormal wear, interferences or promote corrosion. Use a non-abrasive wax to protect (gloss) painted surfaces only.

NOTICE *Never clean plastic parts with strong detergent, degreasing agent, paint thinner, acetone, etc.*

NOTICE *Painted parts which are damaged should be properly repainted to prevent rust.*

24.3 Metal and Rust Prevention

Painted parts which are nicked, scratched or damaged should be covered with touch-up paint or other suitable rust inhibitor to prevent rust. Periodically flush the complete underside of your vehicle to help remove dirt and debris. Keep body drain holes free from packed dirt. You can also use an anti-corrosion spray for the underbody to avoid rusting and corrosion especially for vehicles in coastal areas.

NOTICE *High pressure water can wash the grease from wheel bearings, it may also enter the transmission and/or transfer case reducing the lubricating qualities of the oil. If these components are submerged in water or found to have water mixed with the lubricant, replace lubricant to prevent rusting and premature failure.*

24.4 Storage and Preseason Preparation

When a vehicle will not be used for 4 months or longer, proper storage is recommended. When bringing the ROXOR out of storage, a preparation is required. See a ROXOR authorized dealer, repair shop, or person of your own choosing to have it properly prepared and inspected before use.

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25 TECHNICAL INFORMATION

25.1 Product Identification Number

The ROXOR's main components (body, frame and engine) are identified by serial numbers. These numbers are also required to complete a limited warranty claim. We strongly recommend taking note of these numbers and supply them to your insurance company, in the event your vehicle is stolen. The Product Identification Number (PIN) is a 17 digit number, listed on a label located in the engine compartment, on the driver's side of bulkhead. (see **Figure 27**)

Figure 27. Product Identification Number

25.2 Engine Identification Number

On the 2.5L (152 c.i.) Turbo Diesel m2DiCR engine provided with the ROXOR, the engine identification number is a 10 digit number, located on a machined pad, on the front driver's side of the engine block. (see **Figure 28**)

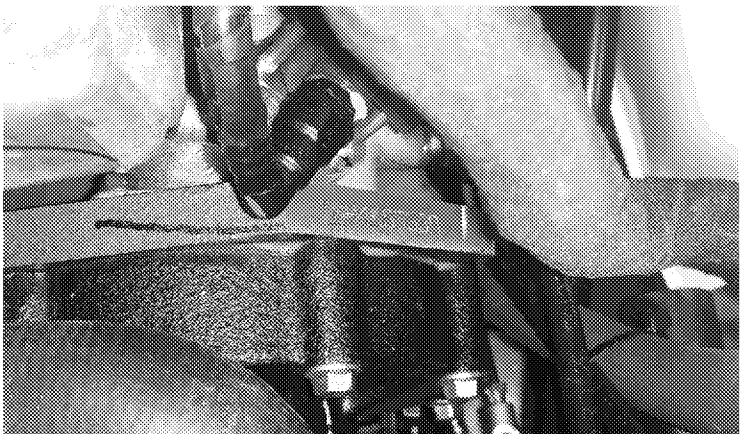

Figure 28. Engine Identification Number

25.3 Evaporative Emission Control System

The evaporative emissions control system on the ROXOR may include parts such as the carburetor or fuel- injection system, fuel tank, fuel hoses, carbon canister, and engine computer. Also

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included may be hoses, belts, connectors and other evaporative-related assemblies.

Some California models are certified to meet the CARB (California Air Resources Board) TP-933. These models are equipped with an evaporative emission control system consisting of an Engine Control Unit (ECU), Exhaust Gas Recirculation Valve (EGR) and a Diesel Oxidation Catalyst (DOC).

The following statement is required by the CCR (California Code of Regulation): An add-on or modified part must be compliant with applicable ARB evaporative emission control standards. A violation of this requirement is punishable by civil and/or criminal punishment.

25.4 Noise Emission Control System

Tampering with the noise emission control system is prohibited. U.S. Federal laws and Canadian provincial laws may prohibit the following acts or the causing there of; removal or rendering inoperative by any person other than for purposes of maintenance, repair or replacement, of any device or element of design, incorporated in the ROXOR for the purpose of noise control prior to its sale or delivery to the ultimate purchaser or, while it is in use or, the use of the vehicle after such device or element of design has been removed or rendered inoperative by any person.

25.5 Acts Presumed to Constitute Tampering

As a certifying manufacturer, Mahindra may deny warranty claims only for failures that have been caused by the owner's or operator's improper maintenance or use, by accidents for which Mahindra has no responsibility, or by acts of God.

- Removal or alteration or the puncturing of the muffler or any engine component which conducts removal of engine exhaust gases.
- Removal or alteration or the puncturing of any part of the intake system.
- Replacing any moving parts of the ROXOR or parts of the exhaust or intake system, with parts other than those specified by the manufacturer.
- Any other act prohibited by the clean air act and its exacting regulations, including; modifying after exhaust emissions, control devices and/or Engine Control Unit (ECU)

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26 SPECIFICATIONS

26.1 Fluid Specifications and Quantities

Fluid Type	FluidSpecification	Fluid Quantity
Brake Fluid	SAE J1703 Dot 3	.95 Quarts (.90 Liters)
Engine Coolant	JIS K2234/ASTM D3306	8.5 Quarts (8.0 Liters)
Engine Oil	API CJ-4 5W/40 (Full Synthetic)	7.4 Quarts (7.0 Liters)
Front & Rear Axle Gear Lube	GL-5 SAE 80W-90	1.9 Quarts (1.8 Liters)
Power Steering Fluid	DEXRON III/Mercon	.63 Quarts (.60 Liters)
Transfer Case Fluid	GL-4 SAE 80W90	1.7 Quarts (1.6 Liters)
Transmission Fluid	GL-4 SAE 80W90	2.1 Quarts (2.0 Liters)

26.2 Vehicle Specifications

Dimensions and Capacities	
Wheelbase	96" (2.44 m)
Dry Weight	3000 lbs. (1360 kg)
Length	148" (3.76 m)
Width	62" (1.57 m)
Height	75" (1.91 m)
Ground Clearance	9" (22.9 cm)

Dimensions and Capacities	
Fuel Capacity	12 gal. (45.4 l)
Rear Payload Capacity	349 lbs. (158.3 kg)
Towing Capacity	3490 lbs. (1583 kg)
Person Capacity	2
Engine	
Type	Turbo Diesel m2DiCR
Cylinders	4 - 4 Stroke Compression Ignition
Displacement	2.5L / 152 Cu. In.
Bore and Stroke	35" x 40" (88.9 x 101.6 mm)
Power	62 HP @ 3200 rpm
Torque	144 ft. lbs. @ 1400-2200 rpm
Compression Ratio	18.6 : 1
Cooling System	Liquid
Fuel System	Direct Injection
Drivetrain	
Transmission	5 Speed Manual
Transfer Case	2 Speed
Driveline	2WD / 4WD
Full Floating Front Axle	3.73 : 1
Semi Floating Rear Axle	3.73 : 1

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26 Specifications

Chassis and Suspension	
Chassis Type	Box Steel Frame
Front Suspension	Leaf Spring w/ Shock Absorbers
Rear Suspension	Leaf Spring w/ Shock Absorbers
Shock Absorbers	Double Acting Hydraulic
Brakes	
Dual Hydraulic Vacuum Assist	Standard
Parking Brake	Standard
Front Brakes	9" Disc
Rear Brakes	11" Drum
Features	
Steering	Hydraulic Power
Instrumentation	Single Gauge
Lighting / Headlights	Halogen
Battery	72Ah / 12v Standard
Alternator	45 to 90 Amps
Power Port	12V Standard
Storage	2 Seat Boxes
Tires	235 / 70R16
Wheel / Steel	16" - 5 x 5.5 Lug
Wheel / Aluminum (Optional)	16" - 5 x 5.5 Lug

Performance	
Maximum Speed	45 mph
Maximum Towing Speed	15 mph
Country of Assembly	USA

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27 TROUBLESHOOTING

Troubleshooting Table	
Possible Cause	**Solution**
Engine Doesn't Turn Over	
Low battery voltage	Recharge the battery
Loose battery connections	Check battery connections, clean and tighten
Loose starter solenoid connection	Check starter connections, clean and tighten
Loose fuse box connections or blown fuse	Remove, inspect and reinstall related fuses
Engine Turns Over, Fails to Start	
Out of fuel	Refuel
Clogged fuel filter/water separator	Drain water separator, inspect and/or replace fuel filter
Clogged air filter	Inspect and/or replace air filter
Water is present in fuel	Drain the fuel system and refuel, replace fuel filter/water separator
Old or non-recommended fuel	Replace with fresh recommended fuel
Water or fuel in crankcase	See your local ROXOR dealer for assistance
Low battery voltage	Recharge the battery
Mechanical failure	See your local ROXOR dealer for assistance

Troubleshooting Table	
Possible Cause	**Solution**
Defective fuel pump	Inspect and/or replace
Engine Runs Irregularly, Stalls or Misfires	
Poor or incorrect fuel	Replace with recommended fuel
Low fuel level	Refuel
Clogged fuel filter	Inspect and/or replace fuel filter
Clogged air filter	Inspect and/or replace air filter
Water present in fuel	Drain water separator, inspect and/or replace fuel filter
Kinked or plugged fuel tank vent line	Inspect and/or replace
Other mechanical failure	See your local ROXOR dealer for assistance
Engine Stops or Loses Power	
Poor or incorrect fuel	Replace with recommended fuel
Air leak in system after turbocharger	Inspect for leaks and repair as required
Boost pressure sensor stuck open	Check sensor condition and repair or replace
Clogged fuel filter	Inspect and/or replace fuel filter
Clogged air filter	Inspect and/or replace air filter

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Troubleshooting Table	
Possible Cause	**Solution**
Water present in fuel	Drain water separator, inspect and/or replace fuel filter
Kinked or plugged fuel tank vent line	Inspect and/or replace
Turbocharger damaged	Inspect and/or replace turbocharger
Other mechanical failure	See your local ROXOR dealer for assistance
Out of fuel	Refuel
Low battery voltage	Recharge the battery
Overheated engine	Clean radiator screen and core, clean engine exterior, operate at lower load
Engine Smokes (Black)	
Air leaks between turbocharger/intake manifold	Check for leaks in the air intake system, repair leaks (check o-rings, clamps, hoses)
Air intake restriction	Inspect and/or replace air filter
Excess Oil Consumption	
Clogged air filter	Inspect and/or replace air filter
Obstruction in crankcase ventilation	Locate and remove the restriction
Intake manifold mounting face leak	Change the manifold gasket or replace the manifold
Air leaks between turbocharger/intake manifold	Check for leaks in the air intake system, repair leaks (check o-rings, clamps, hoses)
Excessive oil/sludge in turbocharger	Change oil and oil filter, service the turbocharger and use recommended engine oil
Turbocharger damaged	Inspect and/or replace turbocharger
Whining Noise at 2000 RPM	
Air leakage between turbocharger/inlet manifold	Check for leaks in the air intake system, repair leaks (check o-rings, clamps, hoses)

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28 LIMITED AND EPA WARRANTIES U.S. AND CANADA

28.1 Limited Warranty U.S. and Canada

2018 ROXOR Scope Of Limited Warranty

Mahindra Vehicle Sales and Service, Inc. ("Mahindra") warrants its 2018 Mahindra ROXOR Offroad Side x Side (hereinafter "ROXOR") sold by authorized Distributors or Dealers (as hereinafter defined) in the United States of America ("USA") and Canada is free from defects in material or workmanship for the period and under the conditions described below. This limited warranty will become null and void if: (1) the ROXOR was used for racing or any other competitive activity, at any point, even by a previous owner; (2) the ROXOR has been altered or modified in such a way so as to adversely affect its operation, performance or durability, or has been altered or modified to change its intended use or (3) the ROXOR is not used for its intended purpose, that purpose being for use and operation solely off-road/off-highway.

Non-factory installed parts and accessories are not covered under this limited warranty. Please refer to the applicable parts and accessories limited warranty text wherever applicable.

"Distributors" as used herein are authorized centers located throughout Canada having express authority from Mahindra to use Dealers to sell Mahindra ROXOR Offroad Side x Side. In Canada, the Distributor will have a direct relationship with Dealers.

"Dealers" as used herein are authorized resellers of the ROXOR. In the United States, the Dealer has a direct relationship with Mahindra. In Canada, the Dealer has a direct relationship with the Distributor.

What Is Covered – Limited Warranty

Mahindra, its Distributors or Dealers will, without charge, repair, replace, or adjust all parts on your ROXOR that malfunction or fail during normal use during the applicable coverage period due to a manufacturing defect in factory-supplied materials or factory workmanship. This warranty does not mean that each ROXOR is defect free. Defects may be unintentionally introduced into vehicles during the design and manufacturing processes and such defects could result in the need for repairs. Mahindra provides the Limited Warranty only to remedy manufacturing defects that result in vehicle part malfunction or failure during the warranty period. The remedy under this written warranty, and any implied warranty, is limited to repair, replacement, or adjustment of defective parts. This exclusive remedy shall not be deemed to have failed its essential purpose so long as Mahindra, through its authorized Dealers, is willing and able to repair, replace, or adjust defective parts in the prescribed manner. Mahindra's liability, if any, shall in no event exceed the cost of correcting manufacturing defects as herein provided and upon expiration of this warranty, any such liability shall terminate.

What Mahindra Will Do

Mahindra's obligations under this warranty are limited to, at its sole discretion, repairing parts found defective under normal use, maintenance and service, or replacing such parts with new genuine

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Mahindra ROXOR parts without charge for parts and labor, at any ROXOR authorized dealer during the warranty coverage period under the conditions described herein. No claim of breach of warranty shall be cause for cancellation or rescission of the sale of the Mahindra ROXOR to the owner.

In the event that service is required outside of the country of original sale, the owner will bear responsibility for any additional charges due to local practices and conditions, such as, but not limited to, freight, insurance, taxes, license fees, import duties, and any and all other financial charges, including those levied by governments, states, territories and their respective agencies.

Mahindra reserves the right to improve or modify products from time to time without assuming any obligation to modify products previously manufactured.

LIMITATIONS OF LIABILITY

THIS WARRANTY IS EXPRESSLY GIVEN AND ACCEPTED IN LIEU OF ANY AND ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING WITHOUT LIMITATION ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. TO THE EXTENT THAT THEY CANNOT BE DISCLAIMED, THE IMPLIED WARRANTIES ARE LIMITED IN DURATION TO THE LIFE OF THE EXPRESS WARRANTY. INCIDENTAL AND CONSEQUENTIAL DAMAGES ARE EXCLUDED FROM COVERAGE UNDER THIS WARRANTY, AS ARE LOSS OF TIME, INCONVENIENCE, LOSS OF USE OF THE ROXOR AND COMMERCIAL LOSSES. STATES/PROVINCES DO NOT ALLOW FOR THE DISCLAIMERS, LIMITATIONS AND EXCLUSIONS IDENTIFIED ABOVE, AND AS A RESULT, THEY MAY NOT APPLY TO YOU. THIS WARRANTY GIVES YOU SPECIFIC RIGHTS, AND YOU MAY ALSO HAVE OTHER LEGAL RIGHTS WHICH MAY VARY FROM STATE TO STATE OR PROVINCE TO PROVINCE.

Neither the distributor, any ROXOR dealer nor any other person has been authorized to make any affirmation, representation or warranty regarding the product, other than those contained in this Limited Warranty, and if made, shall not be enforceable against Mahindra. Mahindra reserves the right to modify this Limited Warranty at any time, being understood that such modification will not alter the warranty conditions applicable to the products sold while this warranty is in effect.

Exclusions – Items Not Warranted

The following are not warranted under any circumstances:

- Normal wear and tear
- Routine maintenance items, tune ups, adjustments
- Damage caused by failure to provide proper maintenance and/or storage, as describe in the Mahindra ROXOR Offroad Side x Side Operator's Guide
- Damage resulting from removal of parts, improper repairs, service, maintenance, modifications or use of parts not manufactured or approved by Mahindra or resulting from repairs done by a person that is not a ROXOR authorized servicing dealer

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- Damage caused by abuse, abnormal use, neglect or operation of the product in a manner inconsistent with the recommended operation described in the Mahindra ROXOR Offroad Side x Side Operator's Guide
- Damage resulting from accident, submersion, fire, theft, vandalism or any act of God
- Operation with fuels, oils or lubricants which are not suitable for use with the product (see the Operator's Guide)
- Damages from rust, corrosion or exposure to the elements, other than Rust Perforation Coverage identified below
- Damage resulting from abuse, including but not limited to water, snow or dirt/dust ingestion
- Incidental or consequential damages, or damages of any kind including without limitation towing, storage, telephone, rental, taxi, inconvenience, insurance coverage, loan payments, loss of time, or loss of income;
- Paint: Mahindra's paint system is designed to provide you a durable finish from a one step process. As such, minor imperfections such as fish eye/craters, spot welds, pin holes and orange peel ("Appearances") or dust and hair ("Contaminants") may be present and visible. This Limited Warranty does not cover Appearances or Contaminants;
- State and Local Laws: Mahindra does not represent or warrant that the ROXOR meets applicable state or local laws relative to Recreational Off-Highway Vehicles however defined in your jurisdiction. It is your responsibility to know and understand all such laws prior to purchase.

Warranty Coverage Period

This limited warranty will be in effect from (1) the date of delivery to the first retail consumer or (2) the date the ROXOR is first put into use, whichever occurs first and for the applicable period below:

- THE EARLIER OF TWENTY-FOUR (24) CONSECUTIVE MONTHS OR TWELVE THOUSAND MILES.

For emission-related components; please also refer to the US EPA EMISSION-RELATED WARRANTY contained herein.

- RUST PERFORATION COVERAGE – TWELVE (12) CONSECUTIVE MONTHS.

This coverage applies to perforation due to corrosion only. Perforation is a rust-through condition, such as an actual hole in a sheet metal panel. Cosmetic or surface corrosion, such as that caused by stone chips or scratches in the paint, is not covered under this limited warranty. This limitation is specifically separate from, and less than, the above-described Twenty-Four (24) month warranty.

The repair or replacement of parts or the performance of service under this Limited Warranty does not extend the life of this Limited Warranty beyond its original expiration date.

Conditions To Have Warranty Coverage

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This warranty coverage is available only if each of the following conditions has been fulfilled:

The ROXOR must be purchased as new and unused by its first owner from a Mahindra ROXOR Dealer authorized to distribute Mahindra ROXOR's in the country in which the sale occurred ("Mahindra ROXOR Dealer")

The Mahindra specified pre-delivery inspection process must be completed and documented and signed by the purchaser

The 2018 Mahindra ROXOR Offroad Side x Side must have undergone proper registration by an authorized Mahindra ROXOR Dealer

The 2018 Mahindra ROXOR Offroad Side x Side must be purchased in the country in which the purchaser resides

Routine maintenance outlined in the Operator's Guide must be timely performed in order to maintain warranty coverage. Mahindra reserves the right to make warranty coverage contingent upon proof of proper maintenance.

Mahindra will not honor this limited warranty to any private use owner or commercial use owner if one of the preceding conditions has not been met. Such limitations are necessary in order to allow Mahindra to preserve both the safety of its products, and also that o its consumers and the general public.

What To Do To Obtain Warranty Coverage

The customer must cease using the Mahindra ROXOR upon the appearance of an anomaly. The customer must notify a servicing Mahindra Dealer as soon as practicable, but never more than three (3) consecutive business days of the appearance of a defect, and provide it with reasonable access to the product and reasonable opportunity to repair it. The customer must also present to the ROXOR authorized dealer, proof of purchase of the product and must sign the repair/work order prior to starting the repair in order to validate the warranty repair. All parts replaced under this Limited Warranty become the property of Mahindra.

Transfer

If the ownership of the ROXOR is transferred during the warranty coverage period, this Limited Warranty, subject to its terms and conditions, shall also be transferred and be valid for the remaining coverage period provided Mahindra or a ROXOR authorized distributor/dealer receives proof that the former owner agreed to the transfer of ownership, in addition to the contact information of the new owner.

Consumer Assistance

In the event of a controversy or a dispute in connection with this Limited Warranty, Mahindra suggests that you try to resolve the issue at the dealership level. We recommend discussing the issue with the authorized dealer's service manager or owner.

If the matter still remains unresolved, contact Mahindra by filling out the customer contact form at WWW.ROXOROFFROAD.COM or contact Mahindra by mail at one of the addresses listed under section **29 Contact Us** of this guide.

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28.2 U.S. EPA Emission-Related Limited Warranty (Canada Excluded)

Mahindra warrants to the ultimate purchaser and each subsequent purchaser that this new vehicle (if purchased in the United States), including all parts of its exhaust emission control system and its evaporative emission control system, meets two conditions:

1. It is designed, built, and equipped so it conforms at the time of sale to the ultimate purchaser with the requirements of 40 CFR 1051 and 40 CFR 1060.
2. It is free from defects in materials and workmanship that may keep it from meeting the requirements of 40 CFR 1051 and 40 CFR 1060.

Where a warrantable condition exists, Mahindra will repair or replace, as it elects, any part or component with a defect in materials or workmanship that would increase the engine's emissions of any regulated pollutant within the stated warranty period at no cost to the owner, including expenses related to diagnosing and repairing or replacing emission-related parts. All defective parts replaced under this warranty become the property of Mahindra.

For all emission-related warranty claims, Mahindra is limiting the diagnosis and repair of emission-related parts to a ROXOR authorized dealer, unless for emergency repairs as required by item 2 of the following list.

Mahindra will not deny emission-related warranty claims based on any of the following:

1. Maintenance or other service Mahindra or Mahindra's authorized facilities performed.
2. Engine/equipment repair work that an operator performed to correct an unsafe, emergency condition attributable to Mahindra as long as the operator tries to restore the engine/equipment to its proper configuration as soon as possible.
3. Any action or inaction by the operator unrelated to the warranty claim.
4. Maintenance that was performed more frequently than Mahindra specifies.
5. Anything that is Mahindra's fault or responsibility.
6. The use of any fuel that is commonly available where the equipment operates unless Mahindra's written maintenance instructions or Operator's Guide state that this fuel would harm the equipment's emission control system and operators can readily find the proper fuel.

Emission-Related Warranty – United States (Except California) Only

The emission-related warranty is valid for United States customers only, and applies to the following period whichever comes first:

Component Type	Hours	Months	Miles/Kilometers
Exhaust emission-related components	500	30	3100/5000
Evaporative emission-related components	N/A	24	N/A

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Components Covered

The emission-related warranty covers all components whose failure would increase an engine's emissions of any regulated pollutant, including but not limited to the following listed components.

For exhaust emissions, emission-related components include any engine parts related to the following systems:

- Air-Induction System
- Fuel System
- Ignition System
- Exhaust Gas Recirculation System

The following parts are also considered emission-related components for exhaust emissions:

- Aftertreatment Devices
- Crankcase Ventilation Valves
- Sensors
- Electronic Control Units

The following parts are considered emission-related components for evaporative emissions:

- Fuel Tank
- Fuel Cap
- Fuel Line
- Fuel Line Fittings
- Clamps*
- Pressure Relief Valves*
- Control Valves*
- Control Solenoids*
- Electronic Controls*
- Vacuum Control Diaphragms*
- Control Cables*
- Control Linkages*
- Purge Valves
- Vapor Hoses
- Liquid/Vapor Separator
- Carbon Canister
- Canister Mounting Brackets
- Carburetor Purge Port Connector

Emission-related components also include any other part whose only purpose is to reduce emissions or whose failure will increase emissions without significantly degrading engine/equipment performance.

*As related to the evaporative emission control system

Limited Applicability

Mahindra may deny emission-related warranty claims for failures that have been caused by the owner's or operator's improper

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maintenance or use, by accidents for which the manufacturer has no responsibility, or by acts of God. For example, an emission-related warranty claim need not be honored for failures that have been directly caused by the operator's abuse of the engine/equipment or the operator's use of the engine/equipment in a manner for which it was not designed and/or not attributable to the manufacturer in any way.

Notice Specifically For Canada Owners

The provisions contained in this written warranty are not intended to limit, modify, take away from, disclaim or exclude any warranties set forth in the operation of The Consumer Products Warranties Act, 1977 (Saskatchewan), the Consumer Protection Act (Quebec), or any other similar provincial or federal legislation. Your ROXOR authorized dealer has ensured that all systems and components of your ROXOR are operating according to manufacturer's specifications. As part of the delivery of your new ROXOR, your Dealer has explained maintenance requirements, operations and warranty conditions assuring that you received all standard items including your owner's manual, warranty policy and owner registration form. Please present your copy of the Owner Registration to your Dealer's service department when service or warranty repairs are required.

28.3 California Evaporative Emissions Control Warranty Statement

Warranty Rights and Obligations

Mahindra Vehicle Sales and Service, Inc. ("Mahindra"), a Delaware corporation, warrants that its new 2018 Mahindra ROXOR Offroad Side x Side ("Vehicle") is designed, built and equipped to meet California's stringent anti-smog standards, administered by the California Air Resources Board. Mahindra warrants that the Vehicle's evaporative emissions control system complies with these standards for the first Five Thousand (5,000) kilometers (Three Thousand One Hundred (3,100) Miles) or thirty (30) months, whichever comes first provided that there has been no abuse, neglect, unapproved modification or improper maintenance of your Vehicle. When a warrantable condition exists, Mahindra will repair or replace the defective part(s) at no cost, including diagnosis, parts and labor.

The Vehicle's evaporative emissions control system may include parts such as the carburetor or fuel- injection system, fuel tank, fuel hoses, carbon canister, and engine computer. Also included may be hoses, belts, connectors and other evaporative-related assemblies.

Owner's Warranty Responsibilities

The Vehicle's owner is responsible for the performance of the required maintenance listed in the Operator's Guide. Mahindra recommends that the owner retain all receipts covering maintenance on the Vehicle, but Mahindra cannot deny warranty solely for the lack of receipts or for failure to ensure the performance of recommended scheduled maintenance.

The owner is responsible for presenting the Vehicle to a ROXOR authorized dealer as soon as a problem exists. The warranty repairs

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should be completed in a reasonable time, not to exceed thirty (30) days.

The Vehicle owner should be aware that Mahindra may deny warranty coverage if the Vehicle or a part has failed due to abuse, neglect, improper maintenance or unapproved modifications. Any questions regarding these warranty rights and responsibilities should be directed to Mahindra or the California Air Resources Board at 9528 Telstar Avenue, El Monte, CA 91731.

Vehicle Parts Covered Under Warranty

Parts covered:

- Canister Mounting Bracket(s)
- Carbon Canister
- Purge Port Connector Clamp(s)*
- Electronic Control*
- Fuel Cap
- Filler Neck
- Filler Neck Hose
- Fuel Line(s)
- Fuel Line Fitting(s)
- Fuel Tank
- Pressure Relief Valve(s)*
- Purge Valve(s)
- Check Valve(s)*
- Vapor Hose(s)
- Flow Reducer
- Filter(s)*
- All other parts not listed that may affect the evaporative emissions control system.

*As related to the evaporative emission control system

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29 CONTACT US

Website: WWW.ROXOROFFROAD.COM

Mahindra Vehicle Sales and Service, Inc.
37 Old Brickyard Road, Fletcher NC 28732
Call Center: (800) 292-0733
Email: CustomerService@roxoroffroad.com

Mahindra Automotive North America Manufacturing
275 Rex Blvd, Auburn Hills, Mi. 48326
Main: (248) 268-6600

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30 PRIVACY INFORMATION

Please be informed that Mahindra may use your registration information for safety and limited warranty related purposes. Mahindra and its partners may also use its customer data to distribute marketing and promotional information about Mahindra and related products. To verify and correct your data, or to be removed from the distribution list for direct marketing, please contact Mahindra using the information below.

Mahindra Vehicle Sales and Service, Inc.

37 Old Brickyard Road, Fletcher NC 28732

Call Center: (800) 292-0733

Email to: CustomerService@roxoroffroad.com

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31 CHANGE OF ADDRESS/OWNERSHIP

If your address has changed or if you are the new owner of the ROXOR, be sure to complete one of the items below:

- Notifying a ROXOR authorized dealer.
- Call (800) 292-0733 for help locating a ROXOR authorized dealer in your area.
- Fill out and mail the self addressed change of address card supplied with this Operator's Guide.

In the case of a change of ownership, please attach proof that the former owner agreed to the transfer. Notify Mahindra even after the limited warranty has expired. This is very important, as it enables Mahindra to reach the new owner if necessary, like when ROXOR campaigns are initiated. It is the owner's responsibility to notify Mahindra.

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32 STOLEN UNITS

If your ROXOR is stolen, you should notify local law enforcement immediately. Then notify Mahindra Vehicle Sales and Service, Inc., or a ROXOR authorized dealer. You will be ask to provide your Name, Address, Phone Number, the Product Identification Number (PIN) and the Date it was stolen. Refer to section **29 Contact Us** for Mahindra addresses and phone numbers.

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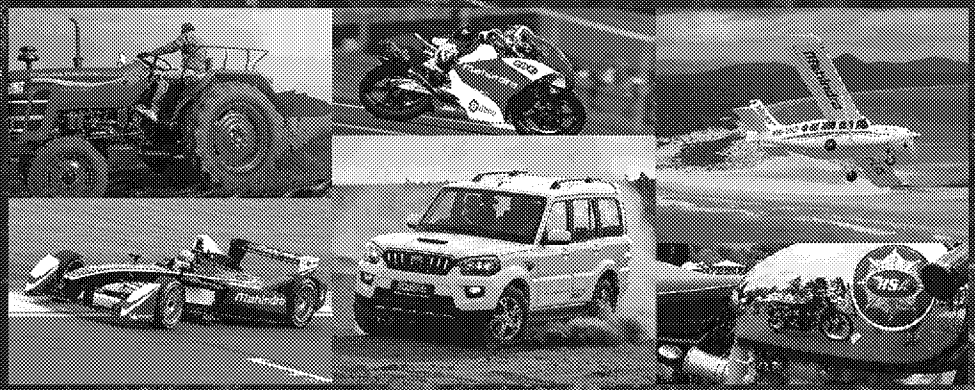

The Mahindra Group is a $19B multinational corporation operating in 19 sectors including Aerospace, Agricultural Equipment, and Defense. Mahindra Automotive is among the group's oldest and largest divisions with a 70-year history of making rugged, work-driven trucks and SUVs. Both the Mahindra Group and Mahindra Automotive stand behind and provide robust support for the ROXOR brand. ROXOR is assembled by Mahindra Automotive North America in a brand-new facility located in Metro Detroit. ROXOR's long-term product plan will roll out a portfolio of ROXOR models, each of which will target specific market segments including off-road recreation, ranching, hunting, property maintenance and more. Of course, hardcore work and play will always be at the ROXOR's core.

MAHINDRA
ROXOR
OFFROAD

POWERED BY MAHINDRA

0003AAD00870N/001

Message

From: Ex. 4 CBI
Sent: 11/2/2018 3:07:32 PM
To: 'MARTINS HENRIQUE' [MARTINS.HENRIQUE@mahindra.com]; Swain, David [swain.david@epa.gov]; Green, Donzell [green.donzell@epa.gov]; Jackson, Cleophas [jackson.cleophas@epa.gov]
CC: HORTON JOHN [HORTON.JOHN@mahindra.com]; FAHY JAMES [FAHY.JAMES@mahindra.com]; Ex. 4 CBI Ex. 4 CBI
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Hi Henrique,

The Ex. 4 CBI AVL Emissions Bench annual maintenance is underway now and is expected to be completed on or about Wednesday 11/7/18. The ATV break-in operation is expected to be completed this weekend when the there is a break in the rainy whether we have been having.

Sincerely,

Ex. 4 CBI

From: MARTINS HENRIQUE [mailto:MARTINS.HENRIQUE@mahindra.com]
Sent: Friday, November 02, 2018 10:34 AM
To: Swain, David; Green, Donzell; Jackson, Cleophas
Cc: Ex. 4 CBI HORTON JOHN; FAHY JAMES
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Dear David,
Based on an email we recently received from Ex. 4 CBI s planning on maintenance of their Emissions benches until November 12, 2018 Ex. 4 CBI could you please confirm?).
Please let us know your decision regarding the test location and we will make sure to supply the vehicle at the date and place required by EPA.

Thanks and kind regards,

Henrique R. Martins

Sr Manager
Technical and Regulatory Affairs
Certification, Homologation, and Compliance
Mahindra Automotive North American Technical Center
275 Rex Blvd
Auburn Hills, MI 48326
(248) 268-6600

From: Swain, David <swain.david@epa.gov>
Sent: Thursday, November 1, 2018 12:25 PM
To: MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Cc: Ex. 4 CBI Green, Donzell <green.donzell@epa.gov>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Mr. Martins,
Please reply-all. Will Ex. 4 CBI be able to perform an emissions test?
Thank-you,
-David Swain

From: MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Sent: Wednesday, October 31, 2018 10:52 AM
To: Jackson, Cleophas <jackson.cleophas@epa.gov>; Swain, David <swain.david@epa.gov>; Green, Donzell <green.donzell@epa.gov>
Cc: HORTON JOHN <HORTON.JOHN@mahindra.com>; FAHY JAMES <FAHY.JAMES@mahindra.com>
Subject: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Dear All,

This note is to inform you that the ROXOR vehicle selected by EPA for Compliance testing was shipped to Ex. 4 CBI yesterday. According to Ex. 4 CBI personnel, service accumulation will be initiated today and should be completed by sometime tomorrow.

The contacts of the Ex. 4 CBI personnel managing the service accumulation are:

Ex. 4 CBI

Please let me know the date the test will be scheduled and confirm the test location, so I can fill out the "Statement of Manufacturer Intent to Witness Test Vehicle Set-up" form.
Also, I wanted to let you know the communication I received regarding this test order (Test Order 18-ATVB-PE-68) only contains attachment 1, 3 and 4.
Please let me know in case you also require attachment 2 to be filled and submitted.
Finally, please send me the document you referred during our meeting as "Blue Sheet" so I can fill it out and submit to you.

Thanks and kind regards,

Henrique R. Martins

Sr Manager
Technical and Regulatory Affairs

Certification, Homologation, and Compliance
Mahindra Automotive North American Technical Center
275 Rex Blvd
Auburn Hills, MI 48326
(248) 268-6600

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For more information please visit http://www.mimecast.com

Message

From: HORTON JOHN [HORTON.JOHN@mahindra.com]
Sent: 1/30/2019 8:21:33 PM
To: Swain, David [swain.david@epa.gov]
CC: MARTINS HENRIQUE [MARTINS.HENRIQUE@mahindra.com]; FAHY JAMES [FAHY.JAMES@mahindra.com]
Subject: KMNCX2.52DM1 - DF Carry across from diesel manual to diesel automatic ROXOR

David,

Henrique is away on urgent family matters so I am contacting you in his stead.

Ex. 4 CBI

Before executing this request, we would like to receive direction from you regarding this issue.

Thanks in advance for response to these issues.
Feel free to contact me directly via my cell phone.

Regards,

John Horton
Sr. Emissions Compliance Engineer
Office of Technical and Regulatory Affairs
Mahindra North American Technical Center

275 Rex Blvd Auburn Hills, MI 48326, USA
Email: horton.john@mahindra.com
Ex. 6 Personal Privacy (PP)
Mahindra
Rise.

From: Swain, David <swain.david@epa.gov>
Sent: Thursday, December 6, 2018 1:58 PM
To: MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Cc: HORTON JOHN <HORTON.JOHN@mahindra.com>
Subject: DF testing after changes

Hi Henrique,
As we discussed, please follow AC17F (PDF pgs23-24) to validate new engine calibrations in the future.
-Dave

(734)214-4377
~~~~~~
| U.S. Environmental Protection Agency |
| Compliance Division |
| Project engineer |
| 2000 Traverwood Drive |
| Ann Arbor, MI 48105 |
~~~~~~

Please consider the environment before printing this email.

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Message

From: MARTINS HENRIQUE [MARTINS.HENRIQUE@mahindra.com]
Sent: 11/29/2018 8:28:25 PM
To: Swain, David [swain.david@epa.gov]
CC: Green, Donzell [green.donzell@epa.gov]; Fredryk, John [fredryk.john@epa.gov]; FAHY JAMES [FAHY.JAMES@mahindra.com]; HORTON JOHN [HORTON.JOHN@mahindra.com]
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019 - VEHICLE DELIVERED AT EPA
Attachments: EPA_ROXOR_Drain fuel tank.docx; Starfire Full Synthetic HD 5W40.pdf; MP Gear Lube (GL-5 Gear Oil SAE 80W-90, 85W-140).pdf; RV Test Vehicle Information Form _JMNCX2.52DM1_02.pdf

Dear David,

This email is to inform you that the vehicle was delivered at the EPA laboratory in Ann Arbor today (around 11am).

Please let me know the test date, so I can fill attachment 4 with the list of representatives to witness the test vehicle set-up.

Also, find attached to this email:

- the updated vehicle custody form
- A word document containing work instructions to drain the fuel tank
- Engine and gear oil (transfer case, differential, manual trans) Safety Data Sheets

Should you have any questions, please do not hesitate to contact me.

Thanks and kind regards,

Henrique R. Martins

Sr Manager
Technical and Regulatory Affairs
Certification, Homologation, and Compliance
Mahindra Automotive North American Technical Center
275 Rex Blvd
Auburn Hills, MI 48326
(248) 268-6600

From: MARTINS HENRIQUE
Sent: Monday, November 26, 2018 2:58 PM
To: 'Swain, David' <swain.david@epa.gov>
Cc: Green, Donzell <green.donzell@epa.gov>; 'fredryk.john@epa.gov' <fredryk.john@epa.gov>; HORTON JOHN <HORTON.JOHN@mahindra.com>; FAHY JAMES <FAHY.JAMES@mahindra.com>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Dear David Swain,

I hope you have enjoyed a wonderful Thanksgiving.

I would like to inform that our Logistics department has booked to pick up the vehicle most likely today with delivery tomorrow, but with the weather situation it could possibly be Wed AM at the latest for delivery.
They have gave the carrier John Fredryk's info for delivery as stated in the "Test Order #18-ATV-PE-68" notification letter.

I will send you an electronic version of the service manual in a separate email.

Thanks and kind regards,

Henrique R. Martins

Sr Manager
Technical and Regulatory Affairs
Certification, Homologation, and Compliance
Mahindra Automotive North American Technical Center
275 Rex Blvd
Auburn Hills, MI 48326
(248) 268-6600

From: Swain, David <swain.david@epa.gov>
Sent: Wednesday, November 21, 2018 4:15 PM
To: MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Cc: Green, Donzell <green.donzell@epa.gov>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Do you also have the service manual in electronic format?

From: MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Sent: Wednesday, November 21, 2018 4:12 PM
To: Swain, David <swain.david@epa.gov>
Cc: Green, Donzell <green.donzell@epa.gov>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Dear David,
As requested, please find attached an electronic version of the Operator Guide containing Maintenance Procedures.
I have issue a request to my logistic department to ship the vehicle from Ex. 4 CBI to the EPA lab, I will let you know as soon as I receive confirmation of the shipment date.

Thanks and kind regards,

Henrique R. Martins

Sr Manager
Technical and Regulatory Affairs
Certification, Homologation, and Compliance
Mahindra Automotive North American Technical Center
275 Rex Blvd

Auburn Hills, MI 48326
(248) 268-6600
<< OLE Object: Picture (Device Independent Bitmap) >>

From: Swain, David <swain.david@epa.gov>
Sent: Wednesday, November 21, 2018 12:40 PM
To: MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Cc: Green, Donzell <green.donzell@epa.gov>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Also, do you have an electronic version of the service manual that you can mail Donzell and me?

Thank !
-Dave

From: MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Sent: Tuesday, November 20, 2018 3:37 PM
To: Swain, David <swain.david@epa.gov>
Cc: Green, Donzell <green.donzell@epa.gov>; FAHY JAMES <FAHY.JAMES@mahindra.com>; HORTON JOHN <HORTON.JOHN@mahindra.com>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Dear David,
Find attached the driver's trace for the test performed at Ex. 4 CBI earlier this year.

Please let us know a date that is convenient to ship the vehicle to the EPA laboratory.

Thanks and kind regards,

Henrique R. Martins

Sr Manager
Technical and Regulatory Affairs
Certification, Homologation, and Compliance
Mahindra Automotive North American Technical Center
275 Rex Blvd
Auburn Hills, MI 48326
(248) 268-6600
<< OLE Object: Picture (Device Independent Bitmap) >>

From: Swain, David <swain.david@epa.gov>
Sent: Monday, November 19, 2018 7:01 PM
To: HORTON JOHN <HORTON.JOHN@mahindra.com>; MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Cc: Green, Donzell <green.donzell@epa.gov>; FAHY JAMES <FAHY.JAMES@mahindra.com>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Thank-you ! Do you have the driver's trace too?

From: HORTON JOHN <HORTON.JOHN@mahindra.com>
Sent: Friday, November 16, 2018 7:15 PM
To: Swain, David <swain.david@epa.gov>; MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>

Cc: Green, Donzell <green.donzell@epa.gov>; FAHY JAMES <FAHY.JAMES@mahindra.com>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

David,

Per your request.
These results were from a development test at another facility Ex. 4 CBI earlier this year.

Total Result (weighted)

Weighted	THC[g/mile]	CO[g/mile]	CO_2[g/mile]	NO_x[g/mile]	CH_4[g/mile]	N_2O[g/mile]	NMHC[g/mile]	HC+NO_x[g/mile]	***Fuel Economy***
Mass per Dist.	Ex. 4 CBI								
Mass per Dist.									
Mass per Dist.									
STD FED 35.0									

Particulate Result

	Bag 1	Bag 2	Bag 3	Bag 4
Filter ID	Ex. 4 CBI			
Particulate Sample Mass				
Mass Corr Factor				
Mass of Particulate Emission				
Specific Particulate Emission (BG Corr)				
Weighted Specific Particulate Emissions				

From: Swain, David <swain.david@epa.gov>
Sent: Friday, November 16, 2018 6:49 PM
To: HORTON JOHN <HORTON.JOHN@mahindra.com>; MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Cc: Green, Donzell <green.donzell@epa.gov>; FAHY JAMES <FAHY.JAMES@mahindra.com>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Thank-you Mr. Horton,
Is it possible you and/or Henrique can please share the PM data again?
I can't locate it.

Thanks,
-Dave Swain

From: HORTON JOHN <HORTON.JOHN@mahindra.com>
Sent: Friday, November 16, 2018 7:41 AM
To: Swain, David <swain.david@epa.gov>; MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Cc: Green, Donzell <green.donzell@epa.gov>; FAHY JAMES <FAHY.JAMES@mahindra.com>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

David,

Henrique is on vacation so I will answer in his stead.

Ex. 4 CBI

The vehicle is ready to ship.

Regards,

John Horton
Sr. Emissions Compliance Engineer
Office of Technical and Regulatory Affairs
Mahindra North American Technical Center
275 Rex Blvd Auburn Hills, MI 48326, USA
Email: horton.john@mahindra.com
Ex. 6 Personal Privacy (PP)
<< OLE Object: Picture (Device Independent Bitmap) >>

From: Swain, David <swain.david@epa.gov>
Sent: Thursday, November 15, 2018 6:22 PM
To: MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Cc: Green, Donzell <green.donzell@epa.gov>; HORTON JOHN <HORTON.JOHN@mahindra.com>; FAHY JAMES <FAHY.JAMES@mahindra.com>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Thank-you Henrique.

I did not ask for you to test it, but I was very interested in any results you have. Rather than make an estimate for which of our test cells is most appropriate to use to test it, your results will help guide me, so I appreciate it.

Also, did you take any particulate measurements or N2O measurements?

We are nearly ready to receive it. I will know more Monday, if it is ok to ship.

Thank-you,
-David Swain

From: MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Sent: Wednesday, November 14, 2018 2:26 PM
To: Swain, David <swain.david@epa.gov>
Cc: Green, Donzell <green.donzell@epa.gov>; HORTON JOHN <HORTON.JOHN@mahindra.com>; FAHY JAMES <FAHY.JAMES@mahindra.com>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Dear David,
As per your request, Ex. 4 CBI o performed Emissions testing yesterday. The test was executed by Ex. 4 CBI without the presence of MNATC, Inc. personnel.
The results are compliant and consistent with other testing (please find the testing results attached to this email).
The vehicle custody form needs to be updated to reflect this additional activity (the emissions testing), please let me know if I can send you the updated form by email.
Please let me also know a date that is convenient to ship the vehicle to the EPA laboratory.

Thanks and kind regards,

Henrique R. Martins

Sr Manager
Technical and Regulatory Affairs
Certification, Homologation, and Compliance
Mahindra Automotive North American Technical Center
275 Rex Blvd
Auburn Hills, MI 48326
(248) 268-6600
<< OLE Object: Picture (Device Independent Bitmap) >>

From: MARTINS HENRIQUE
Sent: Friday, November 9, 2018 4:06 PM
To: Swain, David <swain.david@epa.gov>
Cc: Green, Donzell <green.donzell@epa.gov>; HORTON JOHN <HORTON.JOHN@mahindra.com>; FAHY JAMES <FAHY.JAMES@mahindra.com>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Dear David,
Thank you for the quick response.
I will contact Ex. 4 CBI and inquire about their availability and then inform you whether we will need extension on the required delivery date.

Thanks and kind regards,

Henrique R. Martins

Sr Manager
Technical and Regulatory Affairs
Certification, Homologation, and Compliance
Mahindra Automotive North American Technical Center
275 Rex Blvd
Auburn Hills, MI 48326
(248) 268-6600
<< OLE Object: Picture (Device Independent Bitmap) >>

From: Swain, David <swain.david@epa.gov>
Sent: Friday, November 9, 2018 4:01 PM
To: MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Cc: Green, Donzell <green.donzell@epa.gov>; HORTON JOHN <HORTON.JOHN@mahindra.com>; FAHY JAMES <FAHY.JAMES@mahindra.com>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Hi Henrique,
I am interested in comparing your results with ours, because we do not normally test vehicles that do not have traps. But if Ex. 4 CBI does not have available testing within the next week, I understand. Upon request, we can extend any required delivery date if the reason is that you need to wait for a testing slot to become available.

-Dave

From: MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Sent: Friday, November 09, 2018 3:54 PM
To: Swain, David <swain.david@epa.gov>
Cc: Green, Donzell <green.donzell@epa.gov>; HORTON JOHN <HORTON.JOHN@mahindra.com>; FAHY JAMES <FAHY.JAMES@mahindra.com>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Dear David,
We have only requested Ex. 4 CBI to carry-out service accumulation as instructed in the Test Order 18-ATVB-PE-68.
Please inform us if EPA wants any additional preparations that were not listed in the Test Order 18-ATVB-PE-68 to be performed prior to delivery.
Also, please let us know a date that is more convenient for EPA for the shipment.

Meanwhile I will communicate our logistics team to cancel the shipment on Nov 12, 2018 and wait for your direction.

Thanks and kind regards,

Henrique R. Martins

Sr Manager
Technical and Regulatory Affairs
Certification, Homologation, and Compliance
Mahindra Automotive North American Technical Center
275 Rex Blvd
Auburn Hills, MI 48326
(248) 268-6600

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From: Swain, David <swain.david@epa.gov>
Sent: Friday, November 9, 2018 2:25 PM
To: MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Cc: Green, Donzell <green.donzell@epa.gov>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Please do not ship it yet.
Have you tested it?

From: MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Sent: Friday, November 09, 2018 11:37 AM
To: Swain, David <swain.david@epa.gov>
Cc: Green, Donzell <green.donzell@epa.gov>; Hoban, John <Hoban.John@epa.gov>; HORTON JOHN <HORTON.JOHN@mahindra.com>; FAHY JAMES <FAHY.JAMES@mahindra.com>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Dear David,
This email is to inform you that the Service Accumulation is now complete.
I went to Ex. 4 CBI yesterday to review and sign the forms listed in attachments 1,2 and 3 of the Test Order letter sent by EPA.
A binder containing all the forms (as all as other required documents like Operator's Guide) in inside the storage compartment located under the driver seat.
The storage compartment is locked (keys are on the same key holder as the ignition keys) and the binder is wrapped in a plastic bag.

We are taking care of the arrangements to ship the vehicle to the EPA test laboratory. Shipment is planned for Nov 12, 2018.
Our shipping request has the contact information supplied in the Test Order letter sent by EPA.
Please let me know if this date is convenient to EPA or if you would suggest another date.
Also, please let us know should you have additional instructions for the delivery.

I will fill attachment 4 with the list of representatives to witness the test vehicle set-up as soon as EPA confirms the test date.

Thanks and kind regards,
Henrique R. Martins

Sr Manager
Technical and Regulatory Affairs
Certification, Homologation, and Compliance
Mahindra Automotive North American Technical Center
275 Rex Blvd
Auburn Hills, MI 48326
(248) 268-6600
<< OLE Object: Picture (Device Independent Bitmap) >>

From: MARTINS HENRIQUE
Sent: Friday, November 2, 2018 3:22 PM
To: 'Swain, David' <swain.david@epa.gov>
Cc: 'Green, Donzell' <green.donzell@epa.gov>; 'Hoban, John' <Hoban.John@epa.gov>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Dear David,

So far, based on the information we have from Ex. 4 CBI we do not believe we will need extension on the test order. When the vehicle is ready to ship from Ex. 4 CBI we will notify you (and cc Donzell Green and John Hoban as per your request).

Thanks and kind regards,

Henrique R. Martins

Sr Manager
Technical and Regulatory Affairs
Certification, Homologation, and Compliance
Mahindra Automotive North American Technical Center
275 Rex Blvd
Auburn Hills, MI 48326
(248) 268-6600
<< OLE Object: Picture (Device Independent Bitmap) >>

From: Swain, David <swain.david@epa.gov>
Sent: Friday, November 2, 2018 11:03 AM
To: MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Cc: Ex. 4 CBI HORTON JOHN <HORTON.JOHN@mahindra.com>; FAHY JAMES <FAHY.JAMES@mahindra.com>; Green, Donzell <green.donzell@epa.gov>; Hoban, John <Hoban.John@epa.gov>; Chen, Emily <Chen.Emily@epa.gov>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Mr. Martins,
If Mahindra would like EPA to extend the test order delivery date to NVFEL, we can do this informally via email. Please email me the request, and please make sure to keep Donzell Green and John Hoban in the cc.

Please do not contact John Hoban. Please only keep him in the cc of all correspondence until further notice.

Thank-you,
-David Swain

From: MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Sent: Friday, November 02, 2018 10:34 AM
To: Swain, David <swain.david@epa.gov>; Green, Donzell <green.donzell@epa.gov>; Jackson, Cleophas <jackson.cleophas@epa.gov>
Cc: Ex. 4 CBI HORTON JOHN <HORTON.JOHN@mahindra.com>; FAHY JAMES <FAHY.JAMES@mahindra.com>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Dear David,
Based on an email we recently received from Ex. 4 CBI is planning on maintenance of their Emissions benches until November 12, 2018 (Ex. 4 CBI could you please confirm?).
Please let us know your decision regarding the test location and we will make sure to supply the vehicle at the date and place required by EPA.

Thanks and kind regards,

Henrique R. Martins

Sr Manager
Technical and Regulatory Affairs
Certification, Homologation, and Compliance
Mahindra Automotive North American Technical Center
275 Rex Blvd
Auburn Hills, MI 48326
(248) 268-6600
<< OLE Object: Picture (Device Independent Bitmap) >>

From: Swain, David <swain.david@epa.gov>
Sent: Thursday, November 1, 2018 12:25 PM
To: MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Cc: Ex. 4 CBI Green, Donzell <green.donzell@epa.gov>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Mr. Martins,
Please reply-all. Will Ex. 4 CBI be able to perform an emissions test?
Thank-you,
-David Swain

From: MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Sent: Wednesday, October 31, 2018 10:52 AM
To: Jackson, Cleophas <jackson.cleophas@epa.gov>; Swain, David <swain.david@epa.gov>; Green, Donzell <green.donzell@epa.gov>
Cc: HORTON JOHN <HORTON.JOHN@mahindra.com>; FAHY JAMES <FAHY.JAMES@mahindra.com>
Subject: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Dear All,

This note is to inform you that the ROXOR vehicle selected by EPA for Compliance testing was shipped to Ex. 4 CBI yesterday. According to Ex. 4 CBI personnel, service accumulation will be initiated today and should be completed by sometime tomorrow.

The contacts of the Ex. 4 CBI personnel managing the service accumulation are:

Ex. 4 CBI

Please let me know the date the test will be scheduled and confirm the test location, so I can fill out the "Statement of Manufacturer Intent to Witness Test Vehicle Set-up" form.
Also, I wanted to let you know the communication I received regarding this test order (Test Order 18-ATVB-PE-68) only contains attachment 1, 3 and 4.
Please let me know in case you also require attachment 2 to be filled and submitted.
Finally, please send me the document you referred during our meeting as "Blue Sheet" so I can fill it out and submit to you.

Thanks and kind regards,

Henrique R. Martins

Sr Manager
Technical and Regulatory Affairs
Certification, Homologation, and Compliance
Mahindra Automotive North American Technical Center
275 Rex Blvd
Auburn Hills, MI 48326
(248) 268-6600
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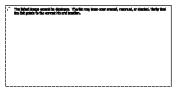
the enclosure/(s) or attachment/(s) if any) are those of the individual sender. ----------



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SAFETY DATA SHEET

Section 1. Identification

CHS Inc.
P.O. Box 64089
Mail station 525
St. Paul, MN 55164-0089

Transportation Emergency (CHEMTREC) : **1-800-424-9300**
Technical Information : **1-651-355-8443**
SDS Information : **1-651-355-8445**

Product name : MP GEAR LUBE
Common name : GL-5 Gear Oil SAE 80W-90, 85W-140
Chemical name : Lubricating oil.
Chemical family : Hydrocarbon.

SDS no. : 0127-049218
Revision date : 11/15/2013
Chemical formula : Mixture

Relevant identified uses of the substance or mixture and uses advised against

Lubricant.

Section 2. Hazards identification

OSHA/HCS status : This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

Classification of the substance or mixture : SKIN SENSITIZATION - Category 1A
AQUATIC TOXICITY (ACUTE) - Category 3
AQUATIC TOXICITY (CHRONIC) - Category 3
Percentage of the mixture consisting of ingredient(s) of unknown toxicity: 1.3%
Percentage of the mixture consisting of ingredient(s) of unknown hazards to the aquatic environment: 1.3%

GHS label elements

Hazard pictograms :

Signal word : Warning

Hazard statements : May cause an allergic skin reaction.
Harmful to aquatic life with long lasting effects.

Precautionary statements

General : Read label before use. Keep out of reach of children. If medical advice is needed, have product container or label at hand.

Hazardous Material Information System (U.S.A.)	**Health :**	1 *	**Flammability :**	1	**Physical hazards :**	0	
National Fire Protection Association (U.S.A.)	**Health :**	1	**Flammability :**	1	**Instability :**	0	

Section 3. Composition/information on ingredients

Substance/mixture : Mixture
Chemical name : Lubricating oil.
Other means of identification : GL-5 Gear Oil SAE 80W-90, 85W-140

Ingredient name	%	CAS number
Long-chain alkyl amine	0.1 - 1	-
Long-chain alkenyl amine	0.1 - 1	-

Any concentration shown as a range is to protect confidentiality or is due to batch variation.

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

Occupational exposure limits, if available, are listed in Section 8.

Section 4. First aid measures

Description of necessary first aid measures

Eye contact : If material comes in contact with the eyes, immediately wash the eyes with large amounts of water for 15 minutes, occasionally lifting the lower and upper lids. Get medical attention.

Inhalation : If person breathes in large amounts of material, move the exposed person to fresh air at once. If breathing has stopped, perform artificial respiration. Keep the person warm and at rest. Get medical attention as soon as possible.

Skin contact : If the material comes in contact with the skin, wash the contaminated skin with soap and water promptly. If the material penetrates through clothing, remove the clothing and wash the skin with soap and water promptly. If irritation persists after washing, get medical attention immediately.

Ingestion : If material has been swallowed, do not induce vomiting. Get medical attention immediately.

Most important symptoms/effects, acute and delayed

Potential acute health effects

Eye contact : No known significant effects or critical hazards.

Inhalation : No known significant effects or critical hazards.

Skin contact : May cause an allergic skin reaction.

Ingestion : No known significant effects or critical hazards.

Over-exposure signs/symptoms

Eye contact : Adverse symptoms may include the following: pain or irritation, watering, redness.

Inhalation : Adverse symptoms may include the following: respiratory tract irritation, coughing.

Skin contact : Adverse symptoms may include the following: irritation, redness.

Ingestion : No known significant effects or critical hazards.

Indication of immediate medical attention and special treatment needed, if necessary

Notes to physician : Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.

Specific treatments : No specific treatment.

Protection of first-aiders : No action shall be taken involving any personal risk or without suitable training. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Wash contaminated clothing thoroughly with water before removing it, or wear gloves.

See toxicological information (Section 11)

Section 5. Fire-fighting measures

Extinguishing media

Suitable extinguishing media : Use water spray to cool fire exposed surfaces and to protect personnel. Foam, dry chemical or water spray (fog) to extinguish fire.

Unsuitable extinguishing media : None known.

Specific hazards arising from the chemical : Toxic fumes gases or vapors may evolve on burning.

Hazardous thermal decomposition products : No specific data.

Special protective actions for fire-fighters : When fighting fires wear full turnout gear and self contained breathing apparatus. Water may cause splattering. Material floats on water.

Special protective equipment for fire-fighters : Not applicable.

Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

For non-emergency personnel : Keep unnecessary and unprotected personnel from entering. Avoid breathing vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.

Methods and materials for containment and cleaning up

Spill : Contain with dikes or absorbent to prevent migration to sewers/streams. Take up small spill with dry chemical absorbent; large spills may require pump or vacuum prior to absorbent. May require excavation of severely contaminated soil.

Section 7. Handling and storage

Precautions for safe handling

Protective measures : Put on appropriate personal protective equipment (see Section 8). Do not get in eyes or on skin or clothing. Do not breathe vapor or mist. Do not ingest. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate.

Advice on general occupational hygiene : Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking.

Conditions for safe storage, including any incompatibilities : Do not store above the following temperature: 113°C (235.4°F). Odorous and toxic fumes may form from the decomposition of this product if stored at excessive temperatures for extended periods of time. Store in accordance with local regulations. Store in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10). Use appropriate containment to avoid environmental contamination.

Section 8. Exposure controls/personal protection

Control parameters

Occupational exposure limits

None.

Appropriate engineering controls : Use only with adequate ventilation.

Environmental exposure controls : Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation.

Individual protection measures

Hygiene measures : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Ensure that eyewash stations and safety showers are close to the workstation location.

Eye/face protection : Recommended: Splash goggles and a face shield, where splash hazard exists.

Skin protection

Hand protection : 4 - 8 hours (breakthrough time): Nitrile gloves.

Body protection : Recommended: Long sleeved coveralls.

Other skin protection : Recommended: Impervious boots.

Respiratory protection : If ventilation is inadequate, use a NIOSH-certified respirator with an organic vapor cartridge and P95 particulate filter.

Section 9. Physical and chemical properties

Appearance

Physical state : Liquid.

Color : Amber.

Odor : Mild.

Odor threshold : Not available.

pH : Not available.

Melting point : Not available.

Boiling point : Not available.

Flash point : Closed cup: >205°C (>401°F)

Flammability : Not available.

Lower and upper explosive (flammable) limits : Not available.

Relative density : 0.89 to 0.91

Evaporation rate : <1 (Butyl acetate = 1)

Solubility : Insoluble in the following materials: cold water and hot water.

Solubility in water : Insoluble

Partition coefficient: n-octanol/water : Not available.

Auto-ignition temperature : >260°C (>500°F)

Decomposition temperature : Not available.

SADT : Not available.

Viscosity : Not available.

Vapor pressure : <0.13 kPa (<1 mm Hg) (68°F)

Vapor density : Not available.

Section 10. Stability and reactivity

Reactivity : No specific test data related to reactivity available for this product or its ingredients.

Chemical stability : The product is stable.

Possibility of hazardous reactions : Under normal conditions of storage and use, hazardous reactions will not occur.

Conditions to avoid : No specific data.

Incompatible materials : Reactive or incompatible with the following materials: oxidizing materials.

Hazardous decomposition products : Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Section 11. Toxicological information

Information on toxicological effects

Acute toxicity

There is no data available.

Irritation/Corrosion

Skin : There is no data available.

Eyes : There is no data available.

Respiratory : There is no data available.

Sensitization

Skin : There is no data available.

Respiratory : There is no data available.

Mutagenicity

There is no data available.

Carcinogenicity

There is no data available.

Reproductive toxicity

There is no data available.

Teratogenicity

There is no data available.

Specific target organ toxicity (single exposure)

There is no data available.

Specific target organ toxicity (repeated exposure)

There is no data available.

Aspiration hazard

There is no data available.

Information on the likely routes of exposure : Dermal contact. Eye contact. Inhalation. Ingestion.

Section 12. Ecological information

Toxicity

There is no data available.

Persistence and degradability

There is no data available.

Bioaccumulative potential

There is no data available.

Mobility in soil

Soil/water partition coefficient (K_{oc}) : There is no data available.

Other adverse effects : No known significant effects or critical hazards.

Section 13. Disposal considerations

Disposal methods : Disposal of this product, solutions and any by-products should comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements.

Section 14. Transport information

DOT IDENTIFICATION NUMBER Not applicable. **DOT proper shipping name** Not applicable.

DOT Hazard Class(es) Not applicable. **PG** Not applicable. **DOT EMER. RESPONSE GUIDE NO.** Not applicable

Section 15. Regulatory information

U.S. Federal regulations : **TSCA 4(a) final test rules**: 2-Butenedioic acid (E)-, di-C8-18-alkyl esters
TSCA 8(a) PAIR: 2-Butenedioic acid (E)-, di-C8-18-alkyl esters
TSCA 8(a) CDR Exempt/Partial exemption: Not determined
United States inventory (TSCA 8b): Not determined.
Clean Water Act (CWA) 311: Vinyl acetate

Clean Air Act Section 602 Class I Substances : Not listed
Clean Air Act Section 602 Class II Substances : Not listed
DEA List I Chemicals (Precursor Chemicals) : Not listed
DEA List II Chemicals (Essential Chemicals) : Not listed
Clean Air Act Section 112(b) Hazardous Air Pollutants (HAPs) : Not listed

SARA 302/304

Composition/information on ingredients

Name	%	EHS	SARA 302 TPQ		SARA 304 RQ	
			(lbs)	(gallons)	(lbs)	(gallons)
Vinyl acetate	0 - 0.1	Yes.	-	-	-	-

SARA 304 RQ : Not applicable.

SARA 311/312

Classification : Immediate (acute) health hazard

Composition/information on ingredients

Name	%	Fire hazard	Sudden release of pressure	Reactive	Immediate (acute) health hazard	Delayed (chronic) health hazard
Long-chain alkyl amine	0.1 - 1	No.	No.	No.	Yes.	No.
Long-chain alkenyl amine	0.1 - 1	No.	No.	No.	Yes.	No.

SARA 313 : This product (does/not) contain toxic chemicals subject to the reporting requirements of SARA Section 313 of the Emergency Planning and Community Right-To-Know Act of 1986 and of 40 CFR 372.

Product name	CAS number	%
Not applicable.		

SARA 313 notifications must not be detached from the SDS and any copying and redistribution of the SDS shall include copying and redistribution of the notice attached to copies of the SDS subsequently redistributed.

State regulations

Massachusetts : None of the components are listed.

New York : None of the components are listed.

New Jersey : The following components are listed: Residual oils (petroleum), solvent-dewaxed; Distillates (petroleum), hydrotreated heavy paraffinic

Pennsylvania : None of the components are listed.

California Prop. 65 : **WARNING:** This product contains less than 0.1% of a chemical known to the State of California to cause cancer.

Ingredient name	Cancer	Reproductive	No significant risk level	Maximum acceptable dosage level
Vinyl acetate	Yes.	No.	No.	No.

Section 16. Other information

Revision date	: 11/15/2013	**Supersedes**	: 07/07/2011
Revised Section(s)	: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16.	**Prepared by**	: KMK Regulatory Services Inc.

Notice to reader

THE INFORMATION CONTAINED IN THIS SDS RELATES ONLY TO THE SPECIFIC MATERIAL IDENTIFIED. IT DOES NOT COVER USE OF THAT MATERIAL IN COMBINATION WITH ANY OTHER MATERIAL OR IN ANY PARTICULAR PROCESS. IN COMPLIANCE WITH 29 C.F.R. 1910.1200(g), CHS HAS PREPARED THIS SDS IN SEGMENTS, WITH THE INTENT THAT THOSE SEGMENTS BE READ TOGETHER AS A WHOLE WITHOUT TEXTUAL OMISSIONS OR ALTERATIONS. CHS BELIEVES THE INFORMATION CONTAINED HEREIN TO BE ACCURATE, BUT MAKES NO REPRESENTATION, GUARANTEE, OR WARRANTY, EXPRESS OR IMPLIED, ABOUT THE ACCURACY, RELIABILITY, OR COMPLETENESS OF THE INFORMATION OR ABOUT THE FITNESS OF CONTENTS HEREIN FOR EITHER GENERAL OR PARTICULAR PURPOSES. PERSONS REVIEWING THIS SDS SHOULD MAKE THEIR OWN DETERMINATION AS TO THE MATERIAL'S SUITABILITY AND COMPLETENESS FOR USE IN THEIR PARTICULAR APPLICATIONS.

CENEX

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Safety Data Sheet

Conforms to HCS 2012 (29 CFR 1910.1200)

Section Identification

Product identifier

Product Name	**STAFIRE 5W40 Full Synthetic HD Diesel**
Material Used	**Automobile motor oil, lubricant**
Uses advised against:	**All others.**

Manufacturer:	Coolants Plus Inc. 2570 Van Hook Ave Hamilton, OH 45015 1-888-258-8723
Issuing date:	April 2, 2015
Revision date:	April 2, 2015
Revision number:	0
Company contact:	1-888-258-8723 - Andrewz@coolantsplus.com
In case of emergency:	CHMC itin A and Canada 1 800 424-300 247 CHMC Outside A and Canada 1 703-527-3887 247

Section 2. Hazards Identification

OSHA/HCS Status: This product is not considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200).

Classification of the substance or Mixture: Not classified.

GHS Label Elements

Hazard pictograms:	No pictogram.
Signal word: Hazard statement:	No signal word. No known significant effects or critical hazards.

Precautionary statements

General:	Read label before use. Keep out of reach of children. If medical advice is needed, have product container or label at hand.
Prevention:	Not applicable.
Response:	Not applicable.
Storage:	Not applicable.
Disposal:	Not applicable.

Hazards not otherwise classified (HNOC): Defatting to the skin. Hot motor oil may cause potentially serious burns.

Other information: USED MOTOR OILS – Used motor oils may contain hazardous components which have the potential to cause skin cancer.
See Toxicological Information, Section 11 of this Safety Data Sheet.

Section 3. Composition/Information on Ingredients

Petroleum mineral oil lubricant base stock with proprietary performance additives mixture.

Substance/mixture: Mixture

Components Name	CAS number	Weight %**
Lubricant Synthetic Base Oil (Petroleum) Highly refined mineral oils (C15-C50)	Mixture *	70 – 99
Passenger Car Motor Oil Additives Mixture	Confidential	1 – 10
Zinc dialkyl dithiophosphate	68649-42-3	0 - <1%

This product does not contain known hazardous materials at the ≥ 1% level or known carcinogens at the ≥ 0.1% level as defined by 29 CFR 1910.1200.

* Contains one or more of the following CAS #s: 64742-52-5, 64742-54-7, 64742-65-0, 64742-56-9, 64742-47-8, 64742-58-1, 64742-01-4, 64742-53-6, 64742-71-8.

**The exact percentage of composition has been withheld as a trade secret.

Section 4. First Aid Measures

Description of necessary first aid measures

General Advice: No specific first aid measures are required. Get medical attention if irritation develops and persists.

Eye contact: In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Eyelids should be held away from the eyeball to ensure thorough rinsing. Check for and remove any contact lenses. Get medical attention if irritation develops and persists.

Skin contact: Wash off immediately with soap and plenty of water while removing all contaminated clothes and shoes. Get medical attention if irritation develops and persists.

Inhalation: In case of inhalation of decomposition products in a fire, symptoms may be delayed. If inhaled, remove to fresh air. The exposed person may need to be kept under medical surveillance for 48 hours. Get medical attention if symptoms occur.

Ingestion: Do NOT induce vomiting. Drink plenty of water. If symptoms persist, call a physician.

Protection of first-aiders: No action shall be taken involving any personal risk or without suitable training.

Most important symptoms and effects, both acute and delayed

See Section 11 for more detailed information on health effects and symptoms.

Most Important Symptoms and Effects: Personnel with pre-existing skin disorders should avoid contact with this product. Under normal use conditions, no adverse effects to health are known.

Eye contact: Not expected to cause prolonged or significant eye irritation.

Skin contact: Contact with skin is not expected to cause prolonged or significant irritation. Contact with skin is not expected to cause an allergic skin response. Not expected to be harmful to internal organs if absorbed through the skin.

Inhalation: Not expected to be harmful if inhaled. Contains petroleum-based mineral oil. May cause respiratory irritation or other pulmonary effects following prolonged or repeated inhalation of oil mist at airborne levels above the recommended oil mist exposure limit. Symptoms of respiratory irritation may include coughing and difficult breathing.

Ingestion: Not expected to be harmful if swallowed.

Note to physician: Treat symptomatically.

Section 5. Fire-Fighting Measures

OSHA Flammable Category: None

Uniform Fire Code: Class IIIB

Flash Point: _176.7 °C (>350 °F)

Extinguishing Media

Suitable Media: In case of fire, use water fog, alcohol resistant foam, dry chemical or carbon dioxide (CO2) extinguisher or spray.

Unsuitable Media: Do not use water jet.

Specific Hazards Arising from the Chemical: Keep product and empty container away from heat and sources of ignition as product will burn. Contact with strong oxidizers may cause fire. In the event of fire, cool tanks with water spray. Fire residues and contaminated fire extinguishing water must be contained, prevented from being discharged to any waterway, sewer or drain and disposed of in accordance with local regulations.

Hazardous Combustion Products: Combustion products may include the following: Carbon dioxide (CO2) Carbon monoxide (CO), and Nitrogen oxides.

Protection of Fire Fighters: Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training. As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

Section 6. Accidental Release Measures

Personal precautions, protective equipment and emergency procedures

For non-emergency personnel: No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Put on appropriate personal protective equipment. Floors may be slippery; use care to avoid falling.

For emergency responders: If specialized clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

Environmental precautions: Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air). See Section 12 for ecological information.

Methods and materials for containment and cleaning up

Small Spills: Stop leak if without risk. Move containers from spill area. Absorb with an inert material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.

Large Spills: Stop leak if without risk. Move containers from spill area. Prevent entry into sewers, water courses, basements or confined areas. Contain and collect spillage with non- combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations. Dispose of via a licensed waste disposal contractor.

NOTE: If RQ (Reportable Quantity) is exceeded or if spills enter a body of water, report immediately to the USEPA's National Response Center at (800) 424-8802. Check with your local and state regulators regarding their reporting requirements.

Section 7. Handling and Storage

Precautions for safe handling

Protective measures: Eye protection and face shield should be used if material is used under conditions that increase the chances of splattering. Put on appropriate personal protective equipment (see Section 8). Keep out of reach of children.

Advice on general occupational hygiene: Do not get in eyes, on skin or on clothing. Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Wash thoroughly after handling. Remove contaminated clothing and protective equipment before entering eating areas.
See also Section 8 for additional information on hygiene measures.

Conditions for safe storage, Including any incompatibilities: Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Use appropriate containment to avoid environmental contamination. Avoid contaminating soil or releases into sewage or drainage systems and bodies of water.

Bulk material handling: Static Hazard: Electrostatic charge may accumulate and create a hazardous condition when handling this material. To minimize this hazard, bonding and grounding may be necessary but may not, by themselves, be sufficient.

Section 8. Exposure Controls/Personal Protection

Control parameters

Occupational Exposure Limits

Chemical name	ACGIH		OSHA		NIOSH	
	TLV	STEL	TLV	STEL	TWA	Ceiling
Lubricant Base Oil (Petroleum) Highly refined mineral oils (C15-C50)	5 mg/m3 (mist)	10 mg/m3 (mist)	5 mg/m3 (mist)	–	–	–

Appropriate engineering controls: Good general ventilation should be sufficient to control worker exposure to airborne contaminants.

Environmental exposure controls: Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

Individual protection measures

Hygiene measures: Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Eye/Face Protection: Wear safety glasses with side shields. A face shield may be necessary under some conditions.

Skin and Body

Protection Hand protection: Wear protective gloves if prolonged or repeated contact is likely. Wear chemical resistant gloves. Recommended: Nitrile gloves. Consult your supervisor or Standard Operating Procedure (SOP) for special handling instructions.

Body protection: No protective equipment is needed under normal use conditions. For non-routine tasks, personal protection equipment for the body should be selected based on the task being performed and the risks involved.

Other skin protection:	Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved.
Respiratory protection:	No respiratory protection is normally required. If user operation generates an oil mist, determine if airborne concentrations are below the occupational exposure limit for mineral oil mist. If not, wear an approved respirator that provides adequate protection from measured concentrations of this material. The correct choice of respiratory protection depends upon the chemicals being handled, the conditions of work and use, and the condition of the respiratory equipment. For air-purifying respirators use a particulate cartridge. Use a positive pressure air-supplying respirator in circumstances where air-purifying respirators may not provide adequate protection

Section 9. Physical and Chemical Properties

Attention: Data represents typical or target values and are not intended to be specifications.

Appearance	
Physical State	Liquid
Color	Clear amber
Odor	Petroleum odor
Odor threshold	Not available
pH	Not applicable
Pour point	-9°C to -36ºC (15.8°F to -32.8°F) (Typical or Target)
Boiling Point	Not available
Flash Point (Closed cup)	>176.6 °C (>350 °F) (Typical or Target)
Evaporation rate	<1 (Butyl acetate = 1)
Flammability (solid, gas)	Not applicable. Based on - Physical state
Lower and upper explosive (flammable) limits	Not available
Vapor pressure	<0.01 mmHg Maximum @ 37.8 ºC (100 ºF)
Vapor density (Air +1)	>1 Minimum
Relative density Solubility	0.86 - 0.88 kg/l at 15°C (Typical or Target)
Partition coefficient: n-Octanol/water	In soluble in water
Auto-ignition temperature	Not available
Decomposition temperature Viscosity (cSt @ 40 °C) Viscosity (cSt @ 100 °C VOC %	Not available Not available 46 – 100 mm2/s (cSt) @ 40 ºC (104 ºF) (Typical or Target) 5.6 – 17.1 mm2/s (cSt) @100 ºC (212 ºF) (Typical or Target) None

Section 10. Stability and Reactivity

Reactivity:	Not reactive under normal storage conditions Stable
Chemical stability:	under normal storage conditions
Possibility of hazardous reactions: Hazardous polymerization: Conditions to avoid: Incompatible materials:	None under normal processing. Hazardous polymerization does not occur. Heat, flames and sparks. Oxidizing agents, Halogens, Halogenated compounds
Hazardous decomposition products:	May include: Fumes, Oil vapors, Smoke, Carbon Oxides (including carbon monoxide and carbon dioxide), Aldehydes, Nitrogen oxides, and incomplete combustion products.

Section 11. Toxicological Information

Information on toxicological

effects Substance/Mixture

Acute Toxicity	Hazard	Additional Information	LC50/LD50 Data
			Typical for mineral oil
Inhalation	Unlikely to be harmful		_2.18 mg/L (rat) (mist,
			estimated)
Dermal	Unlikely to be harmful		_2000 mg/L (rabbit) (estimated)
Oral	Unlikely to be harmful		_2000 mg/l (rat) (estimated)

Aspiration hazard: Not expected to be an aspiration hazard.

Skin Corrosion/Irritation: May cause mild skin irritation. Repeated exposure may cause skin dryness or cracking.

Serious Eye Damage/ May cause mild eye irritation.

Irritation: Skin Sensitization: No information on the mixture, however none of the components have been classified for skin sensitization (or are below the concentration threshold for classification in the formulation).

Respiratory Sensitization: No information on the mixture, however none of the components have been classified for skin sensitization (or are below the concentration threshold for classification in the formulation).

Specific Target Organ Toxicity (Single Exposure) - STOT-SE: No information on the mixture, however none of the components have been classified for target organ toxicity (or are below the concentration threshold for classification in the formulation).

Specific Target Organ Toxicity (Repeated Exposure) – STOT-RE: No information on the mixture, however none of the components have been classified for target organ toxicity (or are below the concentration threshold for classification in the formulation).

Carcinogenicity: No information on the mixture, however none of the components have been classified for carcinogenicity (or are below the concentration threshold for classification in the formulation).

Germ Cell Mutagenicity: No information on the mixture, however none of the components have been classified for germ cell mutagenicity (or are below the concentration threshold for classification in the formulation).

Reproductive Toxicity: No information on the mixture, however none of the components have been classified for reproductive toxicity (or are below the concentration threshold for classification in the formulation).

Information on Toxicity Effects of Compounds

Lubricant Base Mineral Oil (Petroleum)

Mineral oils are known to cause cancer because of carcinogenic components (e.g. Benzene). The lubricant base mineral oils in this product have been highly refined by a variety of processes including severe solvent extraction, severe hydro cracking or severe hydro treating to reduce aromatics and improve performance characteristics. The oils in this product meets the IP-346 criteria of less than 3 percent PHA's and are not considered to be a carcinogen by the International Agency for Research on Cancer.

None of the oils in this product requires a cancer warning under the OSHA Hazard Communication Standard (29 CFR 1910.1200). These oils have not been listed in the National Toxicology Program (NTP) Annual Report nor have they been classified by the International Agency for Research on Cancer (IRAC) as: carcinogenic to humans (Group 1), probably carcinogenic to humans (Group 2A), or possibly carcinogenic to humans (Group 2B). These oils have not been classified by the American Conference of Governmental Industrial Hygienists (ACGIH) as: confirmed human carcinogen (A1), suspected human carcinogen (A2), or confirmed animal carcinogen with unknown relevance to humans (A3).

Used motor oils:

During use in engines, contamination of oil with low levels of cancer-causing combustion products occurs. Used engine oils have been shown to cause skin cancer in mice following repeated application and continuous exposure. Brief or intermittent skin contact with used oil is not expected to have serious effects on humans if the oil is thoroughly removed by

washing with soap and water.

Numerical measures of toxicity
Unknown Acute Toxicity: 0% of the mixture consists of ingredient(s) of unknown toxicity. There is no data available.
Acute toxicity estimates:
The following values are calculated based on chapter 3.1 of the GHS document.
ATEmix (oral) - There is no data available **ATEmix (dermal)** - There is no data available

Section 12. Ecological Information

The information is based on data available for the material, the components of the material, and similar materials.

Ecotoxicity: Not expected to be harmful to aquatic organisms.

Mobility: Base oil component – Low solubility and floats and is expected to migrate from water to land. Expected to partition to sediment and wastewater solids.

Soil/water partition coefficient (K_{oc}): Not available.

Persistence and degradation
Biodegradation: Base oil component – Expected to be inherently biodegradable.

Bioaccumulative potential
Bioaccumulation: This product is not expected to bioaccumulate through food chain in the environment.

Other adverse effects: No known significant effects or critical hazards.

Other ecological information: Spills may form a film on water surfaces causing physical damage to organisms. Oxygen transfer could also be impaired.

Section 13. Disposal Considerations

Disposal recommendations based on material supplied. **Waste treatment methods**

Product waste: Significant quantities of waste product residues should not be disposed of via the sanitary sewer but processed in a suitable effluent treatment plant. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Incineration or landfill should only be considered when recycling is not feasible. Oil collection services are available for used oil recycling.

Contaminated packaging: Empty containers or liners may retain some product residues and could pose a potential fire and explosion hazard. Do not cut, puncture, or weld containers.

Other information: Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Section 14. Transport Information

General information: Petroleum lubricating oil - Not regulated.

	DOT Classification	IMDG	IATA
UN Number	Not Regulated	Not Regulated	_ot _e _ulated
Proper Shipping Name	Petroleum lubrication oil	Petroleum lubrication oil	Petroleum lu _rication oil
Hazard class(s)	-	-	-
Packaging group	-	-	-

Environmental hazards	No	No	No
Marine Pollutant	No	No	No
Addition information	-	-	-

Special precautions for user: Transport within user's premises: Always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

Section 15. Regulatory Information

United States Regulations

United States Inventory (TSCA 8b): All components are listed or exempted.

SARA 302/304: No products were found.

SARA 311/312:
Immediate (Acute) Health Effects: No
Delayed (Chronic) Health Effects: No
Fire Hazard: No
Sudden Release of Pressure Hazard: No
Reactivity Hazard: No

SARA 313:
The following components of this material are found on the EPCRA 313 list:
Zinc dialkyl dithiophosphate <1.0%

Supplier notification: This product does not contain any hazardous ingredients at or above regulated thresholds.

CWA (Clean Water Act): This product does not contain any substances regulated as pollutants pursuant to the Clean Water Act (40 CFR 122.21 and 40 CFR 122.42)

CERCLA: This material, as supplied, does not contain any substances regulated as a hazardous substance under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302).

State Regulations

Massachusetts: None of the components are at or above regulated thresholds.
New Jersey: Petroleum Oil (Motor Oil)
Pennsylvania: None of the components are at or above regulated thresholds.
California Proposition 65: WARNING: This product contains a chemical known to the State of California to cause cancer.
None.

Canada

WHMIS Hazard Class: Not regulated.

International Chemical Inventories:
All components comply with the following chemical inventory requirements: ACIS (Australia), DSL (Canada) EINECS (European Union), IECSC (China), KECI (Korea), PICCS (Philippines).

Section 16. Other Information

NFPA Rating:	**Health Hazard – 0**	**Flammability – 1**	**Instability/Reactivity – 0**
HMIS Rating:	**Health Hazard – 0**	**Flammability – 1**	**Physical Hazards – 0**

(NFPA & HMIS Hazard Rating Key: 0 - Minimum Hazard; 1 - Slight Hazard; 2 - Moderate Hazard; 3 - High Hazard; 4 - Extreme Hazard; * - Chronic Hazard Indicator, & PPE - Personal Protective Equipment Index A to L. These values are obtained using the guidelines or published evaluations prepared by the National Fire Protection Association (NFPA) or the National Paint and Coating Association (for HMIS or Hazardous Material Identification System).

Key to abbreviations

OSHA = Occupational Safety and Health Administration
ACGIH = American Conference of Industrial Hygienists
ATE = Acute Toxicity Estimate
BCF = Bioconcentration Factor
CAS Number = Chemical Abstracts Service Registry Number cSt = Centistroke (mm2/s)
GHS = Globally Harmonized System of Classification and Labeling of Chemicals
IATA = International Air Transport Association
IBC = Intermediate Bulk Container IMDG = International Maritime Dangerous Goods
LogPow = logarithm of the octanol/water partition coefficient
OEL = Occupational Exposure Limit
SDS = Safety Data Sheet
STEL =Short term exposure limit TWA = Time weighted average
UN = United Nations
UN Number = United Nations Number, a four digit number assigned by the United
Nations Committee of Experts on the Transport of Dangerous Goods.

Prepared By: **COOLANTS PLUS INC**

Revision Date: **April 29, 2015**

Status: **Final**

Revision Note: **All Sections. First version in OSHA GHS SDS format.**

Consumer Product Improvement Act of 2008, General Conformity Certification

For Consumer Product Packages: This product has been evaluated and is certified to be labeled and packaged in compliance with the applicable provisions of the Federal Hazardous Substance Act as stated in 16 CFR 1500 and enforced by the Consumer Product Safety Commission. Where applicable the products that require Child Resistant Closures are packaged in accordance with the Poison Prevention Packaging Act as stated in 16 CFR 1700 and enforced by the Consumer Product Safety Commission. All closures have been tested in accordance with the latest protocols. No testing is required to certify compliance with the provisions. The date of the manufacturing is stamped on the product container.

Disclaimer

All reasonably practicable steps have been taken to ensure the information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text. This information is furnished upon condition that the person receiving it shall make their own determination of the suitability of the material for their particular purpose.

End of Safety Data Sheet

Message

From: HORTON JOHN [HORTON.JOHN@mahindra.com]
Sent: 11/1/2018 4:51:27 PM
To: Swain, David [swain.david@epa.gov]; MARTINS HENRIQUE [MARTINS.HENRIQUE@mahindra.com]
CC: FAHY JAMES [FAHY.JAMES@mahindra.com]; Green, Donzell [green.donzell@epa.gov]; Jackson, Cleophas [jackson.cleophas@epa.gov]; Chen, Emily [Chen.Emily@epa.gov]; Hoban, John [Hoban.John@epa.gov]; Ex. 6 Personal Privacy (PP)
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

To All,

I just received an update from Ex. 4 CBI,
Due to the heavy rains they are experiencing, they are now projecting completing the accumulation by this Saturday 11/03/2018.

Regards,

John Horton
Sr. Emissions Compliance Engineer
Office of Technical and Regulatory Affairs
Mahindra North American Technical Center
275 Rex Blvd Auburn Hills, MI 48326, USA
Email: horton.john@mahindra.com
Ex. 6 Personal Privacy (PP)
mahindra
Rise.

From: Swain, David <swain.david@epa.gov>
Sent: Thursday, November 1, 2018 12:11 PM
To: MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Cc: HORTON JOHN <HORTON.JOHN@mahindra.com>; FAHY JAMES <FAHY.JAMES@mahindra.com>; Green, Donzell <green.donzell@epa.gov>; Jackson, Cleophas <jackson.cleophas@epa.gov>; Chen, Emily <Chen.Emily@epa.gov>; Hoban, John <Hoban.John@epa.gov>; Ex. 6 Personal Privacy (PP)
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Thank-you Mr. Martins,
Please see the attached updated test order and Blue sheet.
Please reply-all with the projected ship date.

Thank-you,
-David

From: MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Sent: Wednesday, October 31, 2018 10:52 AM
To: Jackson, Cleophas <jackson.cleophas@epa.gov>; Swain, David <swain.david@epa.gov>; Green, Donzell <green.donzell@epa.gov>

Cc: HORTON JOHN <HORTON.JOHN@mahindra.com>; FAHY JAMES <FAHY.JAMES@mahindra.com>
Subject: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Dear All,

This note is to inform you that the ROXOR vehicle selected by EPA for Compliance testing was shipped to Ex. 4 CBI yesterday. According to Ex. 4 CBI personnel, service accumulation will be initiated today and should be completed by sometime tomorrow.

The contacts of the Ex. 4 CBI personnel managing the service accumulation are:

Ex. 4 CBI

Please let me know the date the test will be scheduled and confirm the test location, so I can fill out the "Statement of Manufacturer Intent to Witness Test Vehicle Set-up" form.
Also, I wanted to let you know the communication I received regarding this test order (Test Order 18-ATVB-PE-68) only contains attachment 1, 3 and 4.
Please let me know in case you also require attachment 2 to be filled and submitted.
Finally, please send me the document you referred during our meeting as "Blue Sheet" so I can fill it out and submit to you.

Thanks and kind regards,

Henrique R. Martins

Sr Manager
Technical and Regulatory Affairs
Certification, Homologation, and Compliance
Mahindra Automotive North American Technical Center
275 Rex Blvd
Auburn Hills, MI 48326
(248) 268-6600

Mahindra Rise

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Message

From: Swain, David [swain.david@epa.gov]
Sent: 8/2/2018 3:41:55 PM
To: MARTINS HENRIQUE [MARTINS.HENRIQUE@mahindra.com]
CC: Green, Donzell [green.donzell@epa.gov]; Hoban, John [Hoban.John@epa.gov]
Subject: Test order: 18-ATVB-PE-66, JMNCX2.52DM1

Please reply-all with the production schedule by month, and which VINs/PINs do you expect to produce on which months.

Please ask Donzell for the latest Blue Sheet, fill it in and reply-all. Also include a hard copy of the blue sheet with the vehicle.

From: MARTINS HENRIQUE [mailto:MARTINS.HENRIQUE@mahindra.com]
Sent: Tuesday, July 31, 2018 12:29 PM
To: LaCroix, John <lacroix.john@epa.gov>; Swain, David <swain.david@epa.gov>
Cc: HORTON JOHN <HORTON.JOHN@mahindra.com>; FAHY JAMES <FAHY.JAMES@mahindra.com>
Subject: RE: Mahindra ROXOR 2019MY Application

Dear John Lacroix,

Thank you for informing that the label image could not be opened.
I am resending the picture in a pdf file this time.

Please confirm the pdf file can be opened.

Thanks and kind regards,

Henrique R. Martins

Sr Manager
Technical and Regulatory Affairs
Certification, Homologation, and Compliance
Mahindra Automotive North American Technical Center
1055 W Square Lake Road
Troy, MI 48098
(248) 268-6600

From: MARTINS HENRIQUE
Sent: Tuesday, July 31, 2018 11:19 AM
To: 'Swain, David' <swain.david@epa.gov>
Cc: 'LaCroix, John' <lacroix.john@epa.gov>; HORTON JOHN <HORTON.JOHN@mahindra.com>; FAHY JAMES <FAHY.JAMES@mahindra.com>
Subject: RE: Mahindra ROXOR 2019MY Application

Dear David Swain,

Following-up from our last call, find below an updated art-work draft for the "OFF-ROAD USE ONLY" label with the additional language warning against altering ROXOR to convert it into an on-road vehicle.
Please let us know if you agree with the language and we will release it to print.

Also, after our last call we learned that our product strategy team is planning to offer Ex. 4 CBI
Although this does not affect Emissions, it is a change in the "Supplemental Information to Application for Certification for Engine Family JMNCX2.52DM1" for 2018MY (2018MY CBI application, page 10).

Ex. 4 CBI

We expect to be able to submit our 2019MY application by tomorrow (August 1st, 2018).

Thanks and kind regards,

Henrique R. Martins

Sr Manager
Technical and Regulatory Affairs
Certification, Homologation, and Compliance
Mahindra Automotive North American Technical Center
1055 W Square Lake Road
Troy, MI 48098
(248) 268-6600

From: MARTINS HENRIQUE
Sent: Monday, July 23, 2018 10:46 AM
To: 'Swain, David' <swain.david@epa.gov>
Cc: LaCroix, John <lacroix.john@epa.gov>; HORTON JOHN <HORTON.JOHN@mahindra.com>; FAHY JAMES

<FAHY.JAMES@mahindra.com>
Subject: RE: Mahindra ROXOR 2019MY Application - "OFF-ROAD USE ONLY" label

Dear David Swain,

Following-up from our call on Friday, find below a draft proposal for the "OFF-ROAD USE ONLY" label with the additional language warning against altering ROXOR to convert it into an on-road vehicle.

Please review it and let us know if you agree with the language, so we will finalize formatting.

Thanks in advance and kind regards,

Henrique R. Martins

Sr Manager
Technical and Regulatory Affairs
Certification, Homologation, and Compliance
Mahindra Automotive North American Technical Center
1055 W Square Lake Road
Troy, MI 48098
(248) 268-6600

From: Swain, David <swain.david@epa.gov>
Sent: Friday, July 20, 2018 3:34 PM
To: MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Cc: LaCroix, John <lacroix.john@epa.gov>; HORTON JOHN <HORTON.JOHN@mahindra.com>; FAHY JAMES <FAHY.JAMES@mahindra.com>
Subject: RE: Mahindra ROXOR 2019MY Application

Please call me

-Dave
(734)214-4377

| U.S. Environmental Protection Agency |
| Compliance Division |
| Project engineer |
| 2000 Traverwood Drive |
| Ann Arbor, MI 48105 |

Please consider the environment before printing this email.

From: MARTINS HENRIQUE [mailto:MARTINS.HENRIQUE@mahindra.com]
Sent: Friday, July 20, 2018 2:01 PM
To: Swain, David <swain.david@epa.gov>
Cc: LaCroix, John <lacroix.john@epa.gov>; HORTON JOHN <HORTON.JOHN@mahindra.com>; FAHY JAMES <FAHY.JAMES@mahindra.com>
Subject: RE: Mahindra ROXOR 2019MY Application

Hi David,

Thank you for your response.

The plan for our 2019MY application will be to carryover our 2018MY application with minor updates.
The current drivetrain including exhaust systems, and associated EDV will be unchanged.

I would like to share basic information regarding these updates with you before we submit the application for your review:

Ex. 4 CBI

We are hoping to have a 2019MY introduction by September 1st.
Therefore we will soon submit our application through EPA VERIFY.

Thanks and kind regards,

Henrique R. Martins

Sr Manager
Technical and Regulatory Affairs
Certification, Homologation, and Compliance
Mahindra Automotive North American Technical Center

1055 W Square Lake Road
Troy, MI 48098
(248) 268-6600

From: Swain, David <swain.david@epa.gov>
Sent: Friday, July 20, 2018 11:31 AM
To: MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Cc: HORTON JOHN <HORTON.JOHN@mahindra.com>; FAHY JAMES <FAHY.JAMES@mahindra.com>; LaCroix, John <lacroix.john@epa.gov>
Subject: RE: Mahindra ROXOR 2019MY Application

Hi Henrique,
Can you please email a list of your concerns?
It's possible John (in the cc above) or I can answer your questions by email.
If you want to call me after the email, any time today is fine.
-Dave
(734)214-4377

| U.S. Environmental Protection Agency |
| Compliance Division |
| Project engineer |
| 2000 Traverwood Drive |
| Ann Arbor, MI 48105 |

Please consider the environment before printing this email.

From: MARTINS HENRIQUE [mailto:MARTINS.HENRIQUE@mahindra.com]
Sent: Friday, July 20, 2018 10:41 AM
To: Swain, David <swain.david@epa.gov>
Cc: HORTON JOHN <HORTON.JOHN@mahindra.com>; FAHY JAMES <FAHY.JAMES@mahindra.com>
Subject: Mahindra ROXOR 2019MY Application

Dear David Swain,

Following-up from one of our recent calls, we would like to have a brief discussion about the ROXOR 2019MY application.

Ex. 4 CBI

Although our 2019MY application will be pretty much a carry-over application, there are few issues we would like to discuss with you beforehand.

Would you suggest a couple of date/times that work for you during the week of July 30th – August 3rd?

This will be a short audio meeting and I will send you an agenda once we set-up the time and date.

Thanks and kind regards,

Henrique R. Martins

Sr Manager
Technical and Regulatory Affairs
Certification, Homologation, and Compliance
Mahindra Automotive North American Technical Center
1055 W Square Lake Road
Troy, MI 48098
(248) 268-6600

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Message

From: MARTINS HENRIQUE [MARTINS.HENRIQUE@mahindra.com]
Sent: 11/20/2018 8:36:50 PM
To: Swain, David [swain.david@epa.gov]
CC: Green, Donzell [green.donzell@epa.gov]; FAHY JAMES [FAHY.JAMES@mahindra.com]; HORTON JOHN [HORTON.JOHN@mahindra.com]
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019
Attachments: 20180126_04-Mahle-w-PM_Speed_Trace_.xlsx

Dear David,
Find attached the driver's trace for the test performed at Ex. 4 CBI earlier this year.

Please let us know a date that is convenient to ship the vehicle to the EPA laboratory.

Thanks and kind regards,

Henrique R. Martins

Sr Manager
Technical and Regulatory Affairs
Certification, Homologation, and Compliance
Mahindra Automotive North American Technical Center
275 Rex Blvd
Auburn Hills, MI 48326
(248) 268-6600

From: Swain, David <swain.david@epa.gov>
Sent: Monday, November 19, 2018 7:01 PM
To: HORTON JOHN <HORTON.JOHN@mahindra.com>; MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Cc: Green, Donzell <green.donzell@epa.gov>; FAHY JAMES <FAHY.JAMES@mahindra.com>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Thank-you ! Do you have the driver's trace too?

From: HORTON JOHN <HORTON.JOHN@mahindra.com>
Sent: Friday, November 16, 2018 7:15 PM
To: Swain, David <swain.david@epa.gov>; MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Cc: Green, Donzell <green.donzell@epa.gov>; FAHY JAMES <FAHY.JAMES@mahindra.com>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

David,

Per your request.
These results were from a development test at another facility Ex. 4 CBI earlier this year.

Total Result (weighted)

Weighted		***Fuel E***
Mass per Dist.	Ex. 4 CBI	mile/ga
Mass per Dist. (rounded)		Km/L
Mass per Dist. (rounded) per km		

Particulate Result

	Bag 1	Bag 2	Bag 3	Bag 4
Filter ID	Ex. 4 CBI			
Particulate Sample Mass				
Mass Corr Factor				
Mass of Particulate Emission				
Specific Particulate Emission (BG Corr)				
Weighted Specific Particulate Emissions				

From: Swain, David <swain.david@epa.gov>
Sent: Friday, November 16, 2018 6:49 PM
To: HORTON JOHN <HORTON.JOHN@mahindra.com>; MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Cc: Green, Donzell <green.donzell@epa.gov>; FAHY JAMES <FAHY.JAMES@mahindra.com>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Thank-you Mr. Horton,
Is it possible you and/or Henrique can please share the PM data again?
I can't locate it.

Thanks,
-Dave Swain

From: HORTON JOHN <HORTON.JOHN@mahindra.com>
Sent: Friday, November 16, 2018 7:41 AM

To: Swain, David <swain.david@epa.gov>; MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Cc: Green, Donzell <green.donzell@epa.gov>; FAHY JAMES <FAHY.JAMES@mahindra.com>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

David,

Henrique is on vacation so I will answer in his stead.

Ex. 4 CBI

The vehicle is ready to ship.

Regards,

John Horton
Sr. Emissions Compliance Engineer
Office of Technical and Regulatory Affairs
Mahindra North American Technical Center
275 Rex Blvd Auburn Hills, MI 48326, USA
Email: horton.john@mahindra.com
Ex. 6 Personal Privacy (PP)
mahindra
Rise.

From: Swain, David <swain.david@epa.gov>
Sent: Thursday, November 15, 2018 6:22 PM
To: MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Cc: Green, Donzell <green.donzell@epa.gov>; HORTON JOHN <HORTON.JOHN@mahindra.com>; FAHY JAMES <FAHY.JAMES@mahindra.com>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Thank-you Henrique.
I did not ask for you to test it, but I was very interested in any results you have. Rather than make an estimate for which of our test cells is most appropriate to use to test it, your results will help guide me, so I appreciate it.

Also, did you take any particulate measurements or N2O measurements?

We are nearly ready to receive it. I will know more Monday, if it is ok to ship.

Thank-you,
-David Swain

From: MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Sent: Wednesday, November 14, 2018 2:26 PM
To: Swain, David <swain.david@epa.gov>
Cc: Green, Donzell <green.donzell@epa.gov>; HORTON JOHN <HORTON.JOHN@mahindra.com>; FAHY JAMES <FAHY.JAMES@mahindra.com>
Subject: RE: Test Or[redacted]18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Dear David,
As per your request, [redacted] to performed Emissions testing yesterday. The test was executed by [redacted] without the presence of MNATC, Inc. personnel.
The results are compliant and consistent with other testing (please find the testing results attached to this email).
The vehicle custody form needs to be updated to reflect this additional activity (the emissions testing), please let me know if I can send you the updated form by email.
Please let me also know a date that is convenient to ship the vehicle to the EPA laboratory.

Thanks and kind regards,

Henrique R. Martins

Sr Manager
Technical and Regulatory Affairs
Certification, Homologation, and Compliance
Mahindra Automotive North American Technical Center
275 Rex Blvd
Auburn Hills, MI 48326
(248) 268-6600

From: MARTINS HENRIQUE
Sent: Friday, November 9, 2018 4:06 PM
To: Swain, David <swain.david@epa.gov>
Cc: Green, Donzell <green.donzell@epa.gov>; HORTON JOHN <HORTON.JOHN@mahindra.com>; FAHY JAMES <FAHY.JAMES@mahindra.com>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Dear David,
Thank you for the quick response.
I will contact [redacted] and inquire about their availability and then inform you whether we will need extension on the required delivery date.

Thanks and kind regards,

Henrique R. Martins

Sr Manager
Technical and Regulatory Affairs
Certification, Homologation, and Compliance
Mahindra Automotive North American Technical Center
275 Rex Blvd
Auburn Hills, MI 48326
(248) 268-6600

From: Swain, David <swain.david@epa.gov>
Sent: Friday, November 9, 2018 4:01 PM
To: MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Cc: Green, Donzell <green.donzell@epa.gov>; HORTON JOHN <HORTON.JOHN@mahindra.com>; FAHY JAMES <FAHY.JAMES@mahindra.com>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Hi Henrique,
I am interested in comparing your results with ours, because we do not normally test vehicles that do not have traps. But if Ex. 4 CBI does not have available testing within the next week, I understand. Upon request, we can extend any required delivery date if the reason is that you need to wait for a testing slot to become available.

-Dave

From: MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Sent: Friday, November 09, 2018 3:54 PM
To: Swain, David <swain.david@epa.gov>
Cc: Green, Donzell <green.donzell@epa.gov>; HORTON JOHN <HORTON.JOHN@mahindra.com>; FAHY JAMES <FAHY.JAMES@mahindra.com>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Dear David,
We have only requested Ex. 4 CBI to carry-out service accumulation as instructed in the Test Order 18-ATVB-PE-68.
Please inform us if EPA wants any additional preparations that were not listed in the Test Order 18-ATVB-PE-68 to be performed prior to delivery.
Also, please let us know a date that is more convenient for EPA for the shipment.

Meanwhile I will communicate our logistics team to cancel the shipment on Nov 12, 2018 and wait for your direction.

Thanks and kind regards,
Henrique R. Martins

Sr Manager
Technical and Regulatory Affairs
Certification, Homologation, and Compliance
Mahindra Automotive North American Technical Center
275 Rex Blvd
Auburn Hills, MI 48326
(248) 268-6600

From: Swain, David <swain.david@epa.gov>
Sent: Friday, November 9, 2018 2:25 PM
To: MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Cc: Green, Donzell <green.donzell@epa.gov>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Please do not ship it yet.
Have you tested it?

From: MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Sent: Friday, November 09, 2018 11:37 AM
To: Swain, David <swain.david@epa.gov>
Cc: Green, Donzell <green.donzell@epa.gov>; Hoban, John <Hoban.John@epa.gov>; HORTON JOHN <HORTON.JOHN@mahindra.com>; FAHY JAMES <FAHY.JAMES@mahindra.com>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Dear David,
This email is to inform you that the Service Accumulation is now complete.
I went to Ex. 4 CBI yesterday to review and sign the forms listed in attachments 1,2 and 3 of the Test Order letter sent by EPA.
A binder containing all the forms (as all as other required documents like Operator's Guide) in inside the storage compartment located under the driver seat.
The storage compartment is locked (keys are on the same key holder as the ignition keys) and the binder is wrapped in a plastic bag.

We are taking care of the arrangements to ship the vehicle to the EPA test laboratory. Shipment is planned for Nov 12, 2018.
Our shipping request has the contact information supplied in the Test Order letter sent by EPA.
Please let me know if this date is convenient to EPA or if you would suggest another date.
Also, please let us know should you have additional instructions for the delivery.

I will fill attachment 4 with the list of representatives to witness the test vehicle set-up as soon as EPA confirms the test date.

Thanks and kind regards,

Henrique R. Martins

Sr Manager
Technical and Regulatory Affairs
Certification, Homologation, and Compliance
Mahindra Automotive North American Technical Center
275 Rex Blvd
Auburn Hills, MI 48326
(248) 268-6600

From: MARTINS HENRIQUE
Sent: Friday, November 2, 2018 3:22 PM
To: 'Swain, David' <swain.david@epa.gov>

Cc: 'Green, Donzell' <green.donzell@epa.gov>; 'Hoban, John' <Hoban.John@epa.gov>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Dear David,

So far, based on the information we have from Ex. 4 CBI we do not believe we will need extension on the test order. When the vehicle is ready to ship from Ex. 4 CBI we will notify you (and cc Donzell Green and John Hoban as per your request).

Thanks and kind regards,

Henrique R. Martins

Sr Manager
Technical and Regulatory Affairs
Certification, Homologation, and Compliance
Mahindra Automotive North American Technical Center
275 Rex Blvd
Auburn Hills, MI 48326
(248) 268-6600

From: Swain, David <swain.david@epa.gov>
Sent: Friday, November 2, 2018 11:03 AM
To: MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Cc: Ex. 4 CBI HORTON JOHN <HORTON.JOHN@mahindra.com>; FAHY JAMES <FAHY.JAMES@mahindra.com>; Green, Donzell <green.donzell@epa.gov>; Hoban, John <Hoban.John@epa.gov>; Chen, Emily <Chen.Emily@epa.gov>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Mr. Martins,
If Mahindra would like EPA to extend the test order delivery date to NVFEL, we can do this informally via email. Please email me the request, and please make sure to keep Donzell Green and John Hoban in the cc.

Please do not contact John Hoban. Please only keep him in the cc of all correspondence until further notice.

Thank-you,
-David Swain

From: MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Sent: Friday, November 02, 2018 10:34 AM
To: Swain, David <swain.david@epa.gov>; Green, Donzell <green.donzell@epa.gov>; Jackson, Cleophas <jackson.cleophas@epa.gov>
Cc: Ex. 4 CBI HORTON JOHN <HORTON.JOHN@mahindra.com>; FAHY JAMES <FAHY.JAMES@mahindra.com>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Dear David,
Based on an email we recently received from Ex. 4 CBI is planning on maintenance of their Emissions benches until November 12, 2018 Ex. 4 CBI could you please confirm?).

Please let us know your decision regarding the test location and we will make sure to supply the vehicle at the date and place required by EPA.

Thanks and kind regards,

Henrique R. Martins

Sr Manager
Technical and Regulatory Affairs
Certification, Homologation, and Compliance
Mahindra Automotive North American Technical Center
275 Rex Blvd
Auburn Hills, MI 48326
(248) 268-6600

From: Swain, David <swain.david@epa.gov>
Sent: Thursday, November 1, 2018 12:25 PM
To: MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Cc: Ex. 4 CBI Green, Donzell <green.donzell@epa.gov>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Mr. Martins,
Please reply-all. Wil Ex. 4 CBI be able to perform an emissions test?
Thank-you,
-David Swain

From: MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Sent: Wednesday, October 31, 2018 10:52 AM
To: Jackson, Cleophas <jackson.cleophas@epa.gov>; Swain, David <swain.david@epa.gov>; Green, Donzell <green.donzell@epa.gov>
Cc: HORTON JOHN <HORTON.JOHN@mahindra.com>; FAHY JAMES <FAHY.JAMES@mahindra.com>
Subject: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Dear All,

This note is to inform you that the ROXOR vehicle selected by EPA for Compliance testing was shipped to Ex. 4 CBI yesterday. According to Ex. 4 CBI personnel, service accumulation will be initiated today and should be completed by sometime tomorrow.

The contacts of the Ex. 4 CBI personnel managing the service accumulation are:

Ex. 4 CBI

Ex. 4 CBI

Please let me know the date the test will be scheduled and confirm the test location, so I can fill out the "Statement of Manufacturer Intent to Witness Test Vehicle Set-up" form.
Also, I wanted to let you know the communication I received regarding this test order (Test Order 18-ATVB-PE-68) only contains attachment 1, 3 and 4.
Please let me know in case you also require attachment 2 to be filled and submitted.
Finally, please send me the document you referred during our meeting as "Blue Sheet" so I can fill it out and submit to you.

Thanks and kind regards,

Henrique R. Martins

Sr Manager
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Message

From: Ex. 4 CBI
Sent: 11/1/2018 4:38:05 PM
To: Swain, David [swain.david@epa.gov]; MARTINS HENRIQUE [MARTINS.HENRIQUE@mahindra.com]
CC: Green, Donzell [green.donzell@epa.gov]; Ex. 4 CBI
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Hi,

Update on the break in operation: The ATV is an open cab configuration. Ex. 4 CBI plans to complete the break outdoors on our test track. With the constant rain, we haven't had an opportunity to complete the break in. We hope to complete the break in over this weekend when the rain is expected to clear.

PS: I will not be in the office on Monday or Tuesday of next week, so please include Ex. 4 CBI in any reply concerning this ATV testing.

Sincerely,

Ex. 4 CBI

From: Swain, David [mailto:swain.david@epa.gov]
Sent: Thursday, November 01, 2018 12:25 PM
To: MARTINS HENRIQUE
Cc: Ex. 4 CBI Green, Donzell
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Mr. Martins,
Please reply-all. Will Ex. 4 CBI be able to perform an emissions test?
Thank-you,
-David Swain

From: MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Sent: Wednesday, October 31, 2018 10:52 AM
To: Jackson, Cleophas <jackson.cleophas@epa.gov>; Swain, David <swain.david@epa.gov>; Green, Donzell <green.donzell@epa.gov>
Cc: HORTON JOHN <HORTON.JOHN@mahindra.com>; FAHY JAMES <FAHY.JAMES@mahindra.com>
Subject: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Dear All,

This note is to inform you that the ROXOR vehicle selected by EPA for Compliance testing was shipped to Ex. 4 CBI yesterday. According to Ex. 4 CBI personnel, service accumulation will be initiated today and should be completed by sometime tomorrow.

The contacts of the Ex. 4 CBI personnel managing the service accumulation are:

Ex. 4 CBI

Please let me know the date the test will be scheduled and confirm the test location, so I can fill out the "Statement of Manufacturer Intent to Witness Test Vehicle Set-up" form.
Also, I wanted to let you know the communication I received regarding this test order (Test Order 18-ATVB-PE-68) only contains attachment 1, 3 and 4.
Please let me know in case you also require attachment 2 to be filled and submitted.
Finally, please send me the document you referred during our meeting as "Blue Sheet" so I can fill it out and submit to you.

Thanks and kind regards,

Henrique R. Martins

Sr Manager
Technical and Regulatory Affairs
Certification, Homologation, and Compliance
Mahindra Automotive North American Technical Center
275 Rex Blvd
Auburn Hills, MI 48326
(248) 268-6600

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Message

From: HORTON JOHN [HORTON.JOHN@mahindra.com]
Sent: 11/17/2018 12:14:49 AM
To: Swain, David [swain.david@epa.gov]; MARTINS HENRIQUE [MARTINS.HENRIQUE@mahindra.com]
CC: Green, Donzell [green.donzell@epa.gov]; FAHY JAMES [FAHY.JAMES@mahindra.com]
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

David,

Per your request.
These results were from a development test at another facility Ex. 4 CBI earlier this year.

Total Result (weighted)

Weighted	***el E***
Mass per Dist.	e/ga
Mass per Dist. (rounded)	/L
Mass per Dist. (rounded) per km	Ex. 4 CBI

Particulate Result

	Bag 1	Bag 2	Bag 3	Bag 4
Filter ID	Ex. 4 CBI			
Particulate Sample Mass				
Mass Corr Factor				
Mass of Particulate Emission				
Specific Particulate Emission (BG Corr)				
Weighted Specific Particulate Emission				

From: Swain, David <swain.david@epa.gov>
Sent: Friday, November 16, 2018 6:49 PM
To: HORTON JOHN <HORTON.JOHN@mahindra.com>; MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Cc: Green, Donzell <green.donzell@epa.gov>; FAHY JAMES <FAHY.JAMES@mahindra.com>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Thank-you Mr. Horton,
Is it possible you and/or Henrique can please share the PM data again?
I can't locate it.

Thanks,
-Dave Swain

From: HORTON JOHN <HORTON.JOHN@mahindra.com>
Sent: Friday, November 16, 2018 7:41 AM
To: Swain, David <swain.david@epa.gov>; MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Cc: Green, Donzell <green.donzell@epa.gov>; FAHY JAMES <FAHY.JAMES@mahindra.com>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

David,

Henrique is on vacation so I will answer in his stead.

Ex. 4 CBI

The vehicle is ready to ship.

Regards,

John Horton
Sr. Emissions Compliance Engineer
Office of Technical and Regulatory Affairs
Mahindra North American Technical Center
275 Rex Blvd Auburn Hills, MI 48326, USA
Email: horton.john@mahindra.com
Ex. 6 Personal Privacy (PP)
mahindra
Rise.

From: Swain, David <swain.david@epa.gov>
Sent: Thursday, November 15, 2018 6:22 PM
To: MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Cc: Green, Donzell <green.donzell@epa.gov>; HORTON JOHN <HORTON.JOHN@mahindra.com>; FAHY JAMES <FAHY.JAMES@mahindra.com>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Thank-you Henrique.
I did not ask for you to test it, but I was very interested in any results you have. Rather than make an estimate for which of our test cells is most appropriate to use to test it, your results will help guide me, so I appreciate it.

Also, did you take any particulate measurements or N2O measurements?

We are nearly ready to receive it. I will know more Monday, if it is ok to ship.

Thank-you,
-David Swain

From: MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Sent: Wednesday, November 14, 2018 2:26 PM
To: Swain, David <swain.david@epa.gov>
Cc: Green, Donzell <green.donzell@epa.gov>; HORTON JOHN <HORTON.JOHN@mahindra.com>; FAHY JAMES <FAHY.JAMES@mahindra.com>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Dear David,
As per your request, Ex. 4 CBI to performed Emissions testing yesterday. The test was executed by Ex. 4 CBI without the presence of MNATC, Inc. personnel.
The results are compliant and consistent with other testing (please find the testing results attached to this email).
The vehicle custody form needs to be updated to reflect this additional activity (the emissions testing), please let me know if I can send you the updated form by email.
Please let me also know a date that is convenient to ship the vehicle to the EPA laboratory.

Thanks and kind regards,

Henrique R. Martins

Sr Manager
Technical and Regulatory Affairs
Certification, Homologation, and Compliance
Mahindra Automotive North American Technical Center
275 Rex Blvd
Auburn Hills, MI 48326
(248) 268-6600

From: MARTINS HENRIQUE
Sent: Friday, November 9, 2018 4:06 PM
To: Swain, David <swain.david@epa.gov>
Cc: Green, Donzell <green.donzell@epa.gov>; HORTON JOHN <HORTON.JOHN@mahindra.com>; FAHY JAMES <FAHY.JAMES@mahindra.com>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Dear David,
Thank you for the quick response.
I will contact Ex. 4 CBI nd inquire about their availability and then inform you whether we will need extension on the required delivery date.

Thanks and kind regards,

Henrique R. Martins

Sr Manager
Technical and Regulatory Affairs
Certification, Homologation, and Compliance
Mahindra Automotive North American Technical Center
275 Rex Blvd
Auburn Hills, MI 48326
(248) 268-6600

Mahindra Rise

From: Swain, David <swain.david@epa.gov>
Sent: Friday, November 9, 2018 4:01 PM
To: MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Cc: Green, Donzell <green.donzell@epa.gov>; HORTON JOHN <HORTON.JOHN@mahindra.com>; FAHY JAMES <FAHY.JAMES@mahindra.com>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Hi Henrique,
I am interested in comparing your results with ours, because we do not normally test vehicles that do not have traps. But if Ex. 4 CBI does not have available testing within the next week, I understand. Upon request, we can extend any required delivery date if the reason is that you need to wait for a testing slot to become available.

-Dave

From: MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Sent: Friday, November 09, 2018 3:54 PM
To: Swain, David <swain.david@epa.gov>
Cc: Green, Donzell <green.donzell@epa.gov>; HORTON JOHN <HORTON.JOHN@mahindra.com>; FAHY JAMES <FAHY.JAMES@mahindra.com>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Dear David,
We have only requested Ex. 4 CBI to carry-out service accumulation as instructed in the Test Order 18-ATVB-PE-68.
Please inform us if EPA wants any additional preparations that were not listed in the Test Order 18-ATVB-PE-68 to be performed prior to delivery.

Also, please let us know a date that is more convenient for EPA for the shipment.

Meanwhile I will communicate our logistics team to cancel the shipment on Nov 12, 2018 and wait for your direction.

Thanks and kind regards,

Henrique R. Martins

Sr Manager
Technical and Regulatory Affairs
Certification, Homologation, and Compliance
Mahindra Automotive North American Technical Center
275 Rex Blvd
Auburn Hills, MI 48326
(248) 268-6600

From: Swain, David <swain.david@epa.gov>
Sent: Friday, November 9, 2018 2:25 PM
To: MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Cc: Green, Donzell <green.donzell@epa.gov>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Please do not ship it yet.
Have you tested it?

From: MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Sent: Friday, November 09, 2018 11:37 AM
To: Swain, David <swain.david@epa.gov>
Cc: Green, Donzell <green.donzell@epa.gov>; Hoban, John <Hoban.John@epa.gov>; HORTON JOHN <HORTON.JOHN@mahindra.com>; FAHY JAMES <FAHY.JAMES@mahindra.com>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Dear David,
This email is to inform you that the Service Accumulation is now complete.
I went to Ex. 4 CBI yesterday to review and sign the forms listed in attachments 1,2 and 3 of the Test Order letter sent by EPA.
A binder containing all the forms (as all as other required documents like Operator's Guide) in inside the storage compartment located under the driver seat.
The storage compartment is locked (keys are on the same key holder as the ignition keys) and the binder is wrapped in a plastic bag.

We are taking care of the arrangements to ship the vehicle to the EPA test laboratory. Shipment is planned for Nov 12, 2018.
Our shipping request has the contact information supplied in the Test Order letter sent by EPA.
Please let me know if this date is convenient to EPA or if you would suggest another date.
Also, please let us know should you have additional instructions for the delivery.

I will fill attachment 4 with the list of representatives to witness the test vehicle set-up as soon as EPA confirms the test date.

Thanks and kind regards,

Henrique R. Martins

Sr Manager
Technical and Regulatory Affairs
Certification, Homologation, and Compliance
Mahindra Automotive North American Technical Center
275 Rex Blvd
Auburn Hills, MI 48326
(248) 268-6600

From: MARTINS HENRIQUE
Sent: Friday, November 2, 2018 3:22 PM
To: 'Swain, David' <swain.david@epa.gov>
Cc: 'Green, Donzell' <green.donzell@epa.gov>; 'Hoban, John' <Hoban.John@epa.gov>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Dear David,

So far, based on the information we have from Ex. 4 CBI we do not believe we will need extension on the test order. When the vehicle is ready to ship from Ex. 4 CBI we will notify you (and cc Donzell Green and John Hoban as per your request).

Thanks and kind regards,

Henrique R. Martins

Sr Manager
Technical and Regulatory Affairs
Certification, Homologation, and Compliance
Mahindra Automotive North American Technical Center
275 Rex Blvd
Auburn Hills, MI 48326
(248) 268-6600

From: Swain, David <swain.david@epa.gov>
Sent: Friday, November 2, 2018 11:03 AM
To: MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Cc: Ex. 4 CBI HORTON JOHN <HORTON.JOHN@mahindra.com>; FAHY JAMES <FAHY.JAMES@mahindra.com>; Green, Donzell <green.donzell@epa.gov>; Hoban, John <Hoban.John@epa.gov>; Chen, Emily <Chen.Emily@epa.gov>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Mr. Martins,
If Mahindra would like EPA to extend the test order delivery date to NVFEL, we can do this informally via email. Please email me the request, and please make sure to keep Donzell Green and John Hoban in the cc.

Please do not contact John Hoban. Please only keep him in the cc of all correspondence until further notice.

Thank-you,
-David Swain

From: MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Sent: Friday, November 02, 2018 10:34 AM
To: Swain, David <swain.david@epa.gov>; Green, Donzell <green.donzell@epa.gov>; Jackson, Cleophas <jackson.cleophas@epa.gov>
Cc: Ex. 4 CBI HORTON JOHN <HORTON.JOHN@mahindra.com>; FAHY JAMES <FAHY.JAMES@mahindra.com>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Dear David,
Based on an email we recently received from Ex. 4 CBI s planning on maintenance of their Emissions benches until November 12, 2018 Ex. 4 CBI could you please confirm?).
Please let us know your decision regarding the test location and we will make sure to supply the vehicle at the date and place required by EPA.

Thanks and kind regards,

Henrique R. Martins

Sr Manager
Technical and Regulatory Affairs
Certification, Homologation, and Compliance
Mahindra Automotive North American Technical Center
275 Rex Blvd
Auburn Hills, MI 48326
(248) 268-6600

From: Swain, David <swain.david@epa.gov>
Sent: Thursday, November 1, 2018 12:25 PM
To: MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Cc: Ex. 4 CBI Green, Donzell <green.donzell@epa.gov>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Mr. Martins,
Please reply-all. Will Ex. 4 CBI be able to perform an emissions test?
Thank-you,
-David Swain

From: MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Sent: Wednesday, October 31, 2018 10:52 AM
To: Jackson, Cleophas <jackson.cleophas@epa.gov>; Swain, David <swain.david@epa.gov>; Green, Donzell <green.donzell@epa.gov>
Cc: HORTON JOHN <HORTON.JOHN@mahindra.com>; FAHY JAMES <FAHY.JAMES@mahindra.com>
Subject: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Dear All,

This note is to inform you that the ROXOR vehicle selected by EPA for Compliance testing was shipped to Ex. 4 CBI esterday.

According to Ex. 4 CBI personnel, service accumulation will be initiated today and should be completed by sometime tomorrow.

The contacts of the Ex. 4 CBI personnel managing the service accumulation are:

Ex. 4 CBI

Please let me know the date the test will be scheduled and confirm the test location, so I can fill out the "Statement of Manufacturer Intent to Witness Test Vehicle Set-up" form.
Also, I wanted to let you know the communication I received regarding this test order (Test Order 18-ATVB-PE-68) only contains attachment 1, 3 and 4.
Please let me know in case you also require attachment 2 to be filled and submitted.
Finally, please send me the document you referred during our meeting as "Blue Sheet" so I can fill it out and submit to you.

Thanks and kind regards,

Henrique R. Martins

Sr Manager
Technical and Regulatory Affairs
Certification, Homologation, and Compliance
Mahindra Automotive North American Technical Center
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Auburn Hills, MI 48326
(248) 268-6600

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----

Message

From: Swain, David [swain.david@epa.gov]
Sent: 12/3/2018 10:40:26 PM
To: MARTINS HENRIQUE [MARTINS.HENRIQUE@mahindra.com]
CC: Fredryk, John [fredryk.john@epa.gov]; Hoban, John [Hoban.John@epa.gov]; Green, Donzell [green.donzell@epa.gov]; Chen, Emily [Chen.Emily@epa.gov]
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019 - TEST DATE

Mr. Martins,
Please email both Donzell Green and me your attachment #4 (Intent to witness form). Donzell can keep you informed if/when we will perform a certifiable emissions test, but currently we have no plans for one.

John Hoban is your contact when the vehicle will be released.

-David Swain

From: MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Sent: Monday, December 03, 2018 11:05 AM
To: Swain, David <swain.david@epa.gov>; Green, Donzell <green.donzell@epa.gov>
Cc: Fredryk, John <fredryk.john@epa.gov>; FAHY JAMES <FAHY.JAMES@mahindra.com>; HORTON JOHN <HORTON.JOHN@mahindra.com>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019 - TEST DATE

Dear David,

Thank you for confirming receipt of the vehicle.

Please let me know the test date, so I can fill attachment 4 with the list of representatives to witness the test vehicle set-up.

Thanks and kind regards,

Henrique R. Martins

Sr Manager
Technical and Regulatory Affairs
Certification, Homologation, and Compliance
Mahindra Automotive North American Technical Center
275 Rex Blvd
Auburn Hills, MI 48326
(248) 268-6600

From: Swain, David <swain.david@epa.gov>
Sent: Thursday, November 29, 2018 3:34 PM
To: MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Cc: Green, Donzell <green.donzell@epa.gov>; Fredryk, John <fredryk.john@epa.gov>; FAHY JAMES <FAHY.JAMES@mahindra.com>; HORTON JOHN <HORTON.JOHN@mahindra.com>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019 - VEHICLE DELIVERED AT EPA

Mr. Martins,
This is to confirm that we received the vehicle today.
Thank-you,
-David Swain

From: MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Sent: Thursday, November 29, 2018 3:28 PM
To: Swain, David <swain.david@epa.gov>
Cc: Green, Donzell <green.donzell@epa.gov>; Fredryk, John <fredryk.john@epa.gov>; FAHY JAMES <FAHY.JAMES@mahindra.com>; HORTON JOHN <HORTON.JOHN@mahindra.com>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019 - VEHICLE DELIVERED AT EPA

Dear David,

This email is to inform you that the vehicle was delivered at the EPA laboratory in Ann Arbor today (around 11am).

Please let me know the test date, so I can fill attachment 4 with the list of representatives to witness the test vehicle set-up.

Also, find attached to this email:

- the updated vehicle custody form
- A word document containing work instructions to drain the fuel tank
- Engine and gear oil (transfer case, differential, manual trans) Safety Data Sheets

Should you have any questions, please do not hesitate to contact me.

Thanks and kind regards,

Henrique R. Martins

Sr Manager
Technical and Regulatory Affairs
Certification, Homologation, and Compliance
Mahindra Automotive North American Technical Center
275 Rex Blvd
Auburn Hills, MI 48326
(248) 268-6600

From: MARTINS HENRIQUE
Sent: Monday, November 26, 2018 2:58 PM
To: 'Swain, David' <swain.david@epa.gov>
Cc: Green, Donzell <green.donzell@epa.gov>; 'fredryk.john@epa.gov' <fredryk.john@epa.gov>; HORTON JOHN <HORTON.JOHN@mahindra.com>; FAHY JAMES <FAHY.JAMES@mahindra.com>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Dear David Swain,

I hope you have enjoyed a wonderful Thanksgiving.

I would like to inform that our Logistics department has booked to pick up the vehicle most likely today with delivery tomorrow, but with the weather situation it could possibly be Wed AM at the latest for delivery.
They have gave the carrier John Fredryk's info for delivery as stated in the "Test Order #18-ATV-PE-68" notification letter.

I will send you an electronic version of the service manual in a separate email.

Thanks and kind regards,

Henrique R. Martins

Sr Manager
Technical and Regulatory Affairs
Certification, Homologation, and Compliance
Mahindra Automotive North American Technical Center
275 Rex Blvd
Auburn Hills, MI 48326
(248) 268-6600

From: Swain, David <swain.david@epa.gov>
Sent: Wednesday, November 21, 2018 4:15 PM
To: MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Cc: Green, Donzell <green.donzell@epa.gov>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Do you also have the service manual in electronic format?

From: MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Sent: Wednesday, November 21, 2018 4:12 PM
To: Swain, David <swain.david@epa.gov>
Cc: Green, Donzell <green.donzell@epa.gov>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Dear David,
As requested, please find attached an electronic version of the Operators Guide containing Maintenance Procedures.
I have issue a request to my logistic department to ship the vehicle from Ex. 4 CBI to the EPA lab, I will let you know as soon as I receive confirmation of the shipment date.

Thanks and kind regards,

Henrique R. Martins

Sr Manager
Technical and Regulatory Affairs
Certification, Homologation, and Compliance
Mahindra Automotive North American Technical Center
275 Rex Blvd
Auburn Hills, MI 48326
(248) 268-6600
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From: Swain, David <swain.david@epa.gov>
Sent: Wednesday, November 21, 2018 12:40 PM
To: MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Cc: Green, Donzell <green.donzell@epa.gov>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Also, do you have an electronic version of the service manual that you can mail Donzell and me?

Thank !
-Dave

From: MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Sent: Tuesday, November 20, 2018 3:37 PM
To: Swain, David <swain.david@epa.gov>
Cc: Green, Donzell <green.donzell@epa.gov>; FAHY JAMES <FAHY.JAMES@mahindra.com>; HORTON JOHN <HORTON.JOHN@mahindra.com>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Dear David,
Find attached the driver's trace for the test performed at Ex. 4 CBI earlier this year.

Please let us know a date that is convenient to ship the vehicle to the EPA laboratory.

Thanks and kind regards,

Henrique R. Martins

Sr Manager
Technical and Regulatory Affairs
Certification, Homologation, and Compliance
Mahindra Automotive North American Technical Center
275 Rex Blvd
Auburn Hills, MI 48326
(248) 268-6600
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From: Swain, David <swain.david@epa.gov>
Sent: Monday, November 19, 2018 7:01 PM
To: HORTON JOHN <HORTON.JOHN@mahindra.com>; MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Cc: Green, Donzell <green.donzell@epa.gov>; FAHY JAMES <FAHY.JAMES@mahindra.com>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Thank-you ! Do you have the driver's trace too?

From: HORTON JOHN <HORTON.JOHN@mahindra.com>
Sent: Friday, November 16, 2018 7:15 PM
To: Swain, David <swain.david@epa.gov>; MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Cc: Green, Donzell <green.donzell@epa.gov>; FAHY JAMES <FAHY.JAMES@mahindra.com>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

David,

Per your request.
These results were from a development test at another facility **Ex. 4 CBI** earlier this year.

Total Result (weighted)

	Weighted THC[g/mile]	CO[g/mile]	CO_2[g/mile]	NO_x[g/mile]	CH_4[g/mile]	N_2O[g/mile]	NMHC[g/mile]	HC+NO_x[g/mile]	***Fuel Economy***
Mass per Dist.									
Mass per Dist. (rounded									
Mass per Dist. (rounded per km									

Ex. 4 CBI

Particulate Result

	Bag 1	Bag 2	Bag 3	Bag 4

Filter ID		Ex. 4 CBI
Particulate Sample Mass		
Mass Corr Factor		
Mass of Particulate Emission		
Specific Particulate Emission (BG Corr)	g/mile	
Weighted Specific Particulate Emissions	g/mile	

From: Swain, David <swain.david@epa.gov>
Sent: Friday, November 16, 2018 6:49 PM
To: HORTON JOHN <HORTON.JOHN@mahindra.com>; MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Cc: Green, Donzell <green.donzell@epa.gov>; FAHY JAMES <FAHY.JAMES@mahindra.com>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Thank-you Mr. Horton,
Is it possible you and/or Henrique can please share the PM data again?
I can't locate it.

Thanks,
-Dave Swain

From: HORTON JOHN <HORTON.JOHN@mahindra.com>
Sent: Friday, November 16, 2018 7:41 AM
To: Swain, David <swain.david@epa.gov>; MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Cc: Green, Donzell <green.donzell@epa.gov>; FAHY JAMES <FAHY.JAMES@mahindra.com>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

David,

Henrique is on vacation so I will answer in his stead.

Ex. 4 CBI

Ex. 4 CBI

The vehicle is ready to ship.

Regards,

John Horton
Sr. Emissions Compliance Engineer
Office of Technical and Regulatory Affairs
Mahindra North American Technical Center
275 Rex Blvd Auburn Hills, MI 48326, USA
Email: horton.john@mahindra.com
Ex. 6 Personal Privacy (PP)
<< OLE Object: Picture (Device Independent Bitmap) >>

From: Swain, David <swain.david@epa.gov>
Sent: Thursday, November 15, 2018 6:22 PM
To: MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Cc: Green, Donzell <green.donzell@epa.gov>; HORTON JOHN <HORTON.JOHN@mahindra.com>; FAHY JAMES <FAHY.JAMES@mahindra.com>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Thank-you Henrique.
I did not ask for you to test it, but I was very interested in any results you have. Rather than make an estimate for which of our test cells is most appropriate to use to test it, your results will help guide me, so I appreciate it.

Also, did you take any particulate measurements or N2O measurements?

We are nearly ready to receive it. I will know more Monday, if it is ok to ship.

Thank-you,
-David Swain

From: MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Sent: Wednesday, November 14, 2018 2:26 PM
To: Swain, David <swain.david@epa.gov>
Cc: Green, Donzell <green.donzell@epa.gov>; HORTON JOHN <HORTON.JOHN@mahindra.com>; FAHY JAMES

<FAHY.JAMES@mahindra.com>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Dear David,
As per your request, Ex. 4 CBI to performed Emissions testing yesterday. The test was executed by Ex. 4 CBI without the presence of MNATC, Inc. personnel.
The results are compliant and consistent with other testing (please find the testing results attached to this email).
The vehicle custody form needs to be updated to reflect this additional activity (the emissions testing), please let me know if I can send you the updated form by email.
Please let me also know a date that is convenient to ship the vehicle to the EPA laboratory.

Thanks and kind regards,

Henrique R. Martins

Sr Manager
Technical and Regulatory Affairs
Certification, Homologation, and Compliance
Mahindra Automotive North American Technical Center
275 Rex Blvd
Auburn Hills, MI 48326
(248) 268-6600
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From: MARTINS HENRIQUE
Sent: Friday, November 9, 2018 4:06 PM
To: Swain, David <swain.david@epa.gov>
Cc: Green, Donzell <green.donzell@epa.gov>; HORTON JOHN <HORTON.JOHN@mahindra.com>; FAHY JAMES <FAHY.JAMES@mahindra.com>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Dear David,
Thank you for the quick response.
I will contact Ex. 4 CBI and inquire about their availability and then inform you whether we will need extension on the required delivery date.

Thanks and kind regards,

Henrique R. Martins

Sr Manager
Technical and Regulatory Affairs
Certification, Homologation, and Compliance
Mahindra Automotive North American Technical Center
275 Rex Blvd
Auburn Hills, MI 48326
(248) 268-6600
<< OLE Object: Picture (Device Independent Bitmap) >>

From: Swain, David <swain.david@epa.gov>
Sent: Friday, November 9, 2018 4:01 PM

To: MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Cc: Green, Donzell <green.donzell@epa.gov>; HORTON JOHN <HORTON.JOHN@mahindra.com>; FAHY JAMES <FAHY.JAMES@mahindra.com>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Hi Henrique,
I am interested in comparing your results with ours, because we do not normally test vehicles that do not have traps. But if Ex. 4 CBI does not have available testing within the next week, I understand. Upon request, we can extend any required delivery date if the reason is that you need to wait for a testing slot to become available.

-Dave

From: MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Sent: Friday, November 09, 2018 3:54 PM
To: Swain, David <swain.david@epa.gov>
Cc: Green, Donzell <green.donzell@epa.gov>; HORTON JOHN <HORTON.JOHN@mahindra.com>; FAHY JAMES <FAHY.JAMES@mahindra.com>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Dear David,
We have only requested Ex. 4 CBI to carry-out service accumulation as instructed in the Test Order 18-ATVB-PE-68.
Please inform us if EPA wants any additional preparations that were not listed in the Test Order 18-ATVB-PE-68 to be performed prior to delivery.
Also, please let us know a date that is more convenient for EPA for the shipment.

Meanwhile I will communicate our logistics team to cancel the shipment on Nov 12, 2018 and wait for your direction.

Thanks and kind regards,
Henrique R. Martins

Sr Manager
Technical and Regulatory Affairs
Certification, Homologation, and Compliance
Mahindra Automotive North American Technical Center
275 Rex Blvd
Auburn Hills, MI 48326
(248) 268-6600
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From: Swain, David <swain.david@epa.gov>
Sent: Friday, November 9, 2018 2:25 PM
To: MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Cc: Green, Donzell <green.donzell@epa.gov>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Please do not ship it yet.
Have you tested it?

From: MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Sent: Friday, November 09, 2018 11:37 AM
To: Swain, David <swain.david@epa.gov>
Cc: Green, Donzell <green.donzell@epa.gov>; Hoban, John <Hoban.John@epa.gov>; HORTON JOHN

<HORTON.JOHN@mahindra.com>; FAHY JAMES <FAHY.JAMES@mahindra.com>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Dear David,
This email is to inform you that the Service Accumulation is now complete.
I went to Ex. 4 CBI yesterday to review and sign the forms listed in attachments 1,2 and 3 of the Test Order letter sent by EPA.
A binder containing all the forms (as all as other required documents like Operator's Guide) in inside the storage compartment located under the driver seat.
The storage compartment is locked (keys are on the same key holder as the ignition keys) and the binder is wrapped in a plastic bag.

We are taking care of the arrangements to ship the vehicle to the EPA test laboratory. Shipment is planned for Nov 12, 2018.
Our shipping request has the contact information supplied in the Test Order letter sent by EPA.
Please let me know if this date is convenient to EPA or if you would suggest another date.
Also, please let us know should you have additional instructions for the delivery.

I will fill attachment 4 with the list of representatives to witness the test vehicle set-up as soon as EPA confirms the test date.

Thanks and kind regards,
Henrique R. Martins

Sr Manager
Technical and Regulatory Affairs
Certification, Homologation, and Compliance
Mahindra Automotive North American Technical Center
275 Rex Blvd
Auburn Hills, MI 48326
(248) 268-6600
<< OLE Object: Picture (Device Independent Bitmap) >>

From: MARTINS HENRIQUE
Sent: Friday, November 2, 2018 3:22 PM
To: 'Swain, David' <swain.david@epa.gov>
Cc: 'Green, Donzell' <green.donzell@epa.gov>; 'Hoban, John' <Hoban.John@epa.gov>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Dear David,

So far, based on the information we have from Ex. 4 CBI we do not believe we will need extension on the test order.
When the vehicle is ready to ship from Ex. 4 CBI we will notify you (and cc Donzell Green and John Hoban as per your request).

Thanks and kind regards,

Henrique R. Martins

Sr Manager
Technical and Regulatory Affairs
Certification, Homologation, and Compliance

Mahindra Automotive North American Technical Center
275 Rex Blvd
Auburn Hills, MI 48326
(248) 268-6600
<< OLE Object: Picture (Device Independent Bitmap) >>

From: Swain, David <swain.david@epa.gov>
Sent: Friday, November 2, 2018 11:03 AM
To: MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Cc: Ex. 4 CBI HORTON JOHN <HORTON.JOHN@mahindra.com>; FAHY JAMES <FAHY.JAMES@mahindra.com>; Green, Donzell <green.donzell@epa.gov>; Hoban, John <Hoban.John@epa.gov>; Chen, Emily <Chen.Emily@epa.gov>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Mr. Martins,
If Mahindra would like EPA to extend the test order delivery date to NVFEL, we can do this informally via email. Please email me the request, and please make sure to keep Donzell Green and John Hoban in the cc.

Please do not contact John Hoban. Please only keep him in the cc of all correspondence until further notice.

Thank-you,
-David Swain

From: MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Sent: Friday, November 02, 2018 10:34 AM
To: Swain, David <swain.david@epa.gov>; Green, Donzell <green.donzell@epa.gov>; Jackson, Cleophas <jackson.cleophas@epa.gov>
Cc: Ex. 4 CBI HORTON JOHN <HORTON.JOHN@mahindra.com>; FAHY JAMES <FAHY.JAMES@mahindra.com>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Dear David,
Based on an email we recently received from Ex. 4 CBI is planning on maintenance of their Emissions benches until November 12, 2018 (Ex. 4 CBI could you please confirm?).
Please let us know your decision regarding the test location and we will make sure to supply the vehicle at the date and place required by EPA.

Thanks and kind regards,

Henrique R. Martins

Sr Manager
Technical and Regulatory Affairs
Certification, Homologation, and Compliance
Mahindra Automotive North American Technical Center
275 Rex Blvd
Auburn Hills, MI 48326
(248) 268-6600
<< OLE Object: Picture (Device Independent Bitmap) >>

From: Swain, David <swain.david@epa.gov>
Sent: Thursday, November 1, 2018 12:25 PM
To: MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>

Cc: Ex. 4 CBI Green, Donzell <green.donzell@epa.gov>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Mr. Martins,
Please reply-all. Will Ex. 4 CBI be able to perform an emissions test?
Thank-you,
-David Swain

From: MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Sent: Wednesday, October 31, 2018 10:52 AM
To: Jackson, Cleophas <jackson.cleophas@epa.gov>; Swain, David <swain.david@epa.gov>; Green, Donzell <green.donzell@epa.gov>
Cc: HORTON JOHN <HORTON.JOHN@mahindra.com>; FAHY JAMES <FAHY.JAMES@mahindra.com>
Subject: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Dear All,

This note is to inform you that the ROXOR vehicle selected by EPA for Compliance testing was shipped to Ex. 4 CBI yesterday. According to Ex. 4 CBI personnel, service accumulation will be initiated today and should be completed by sometime tomorrow.

The contacts of the Ex. 4 CBI personnel managing the service accumulation are:

Ex. 4 CBI

Please let me know the date the test will be scheduled and confirm the test location, so I can fill out the "Statement of Manufacturer Intent to Witness Test Vehicle Set-up" form.
Also, I wanted to let you know the communication I received regarding this test order (Test Order 18-ATVB-PE-68) only contains attachment 1, 3 and 4.
Please let me know in case you also require attachment 2 to be filled and submitted.
Finally, please send me the document you referred during our meeting as "Blue Sheet" so I can fill it out and submit to you.

Thanks and kind regards,

Henrique R. Martins

Sr Manager

Technical and Regulatory Affairs
Certification, Homologation, and Compliance
Mahindra Automotive North American Technical Center
275 Rex Blvd
Auburn Hills, MI 48326
(248) 268-6600
<< OLE Object: Picture (Device Independent Bitmap) >>

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Message

From: MARTINS HENRIQUE [MARTINS.HENRIQUE@mahindra.com]
Sent: 7/3/2018 7:27:55 PM
To: Swain, David [swain.david@epa.gov]
Subject: JMNCX2.52DM1 - Request for CSI update
Attachments: ATT00001.txt

Flag: Follow up

Dear David Swain,

We were requested by CARB to make additional revisions on CSI.7 to allow the proper processing of CARB EO Approval.

Due to the urgency to obtain CARB EO approval, we would like to make a CSI update request as soon as possible.

Ex. 4 CBI

Please let me know should you foresee any issues or have any questions.

Thanks in advance and kind regards,

Henrique R. Martins

Sr Manager
Technical and Regulatory Affairs
Certification, Homologation, and Compliance
Mahindra Automotive North American Technical Center

1055 W Square Lake Road
Troy, MI 48098
(248) 268-6600

From: MARTINS HENRIQUE
Sent: Thursday, June 28, 2018 9:10 AM
To: 'Swain, David' <swain.david@epa.gov>
Subject: RE: JMNCX2.52DM1 - Request for Revised Certificate

Dear David Swain,
Thank you very much

Henrique R. Martins

Sr Manager
Technical and Regulatory Affairs
Certification, Homologation, and Compliance
Mahindra Automotive North American Technical Center
1055 W Square Lake Road
Troy, MI 48098
(248) 268-6600

From: Swain, David [mailto:swain.david@epa.gov]
Sent: Wednesday, June 27, 2018 5:49 PM
To: MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Subject: RE: JMNCX2.52DM1 - Request for Revised Certificate

I have approved it for issue.

From: MARTINS HENRIQUE [mailto:MARTINS.HENRIQUE@mahindra.com]
Sent: Wednesday, June 27, 2018 4:39 PM
To: Swain, David <swain.david@epa.gov>
Subject: JMNCX2.52DM1 - Request for Revised Certificate

Dear David Swain,

I am reaching out to see if you have had a chance to review our application.

Please let me know should you have any questions.

Thanks and kind regards,

Henrique R. Martins

Henrique R. Martins

Sr Manager
Technical and Regulatory Affairs
Certification, Homologation, and Compliance
Mahindra Automotive North American Technical Center
1055 W Square Lake Road
Troy, MI 48098
(248) 268-6600

-----Original Message-----
From: no-reply@epa.gov [mailto:no-reply@epa.gov]
Sent: Wednesday, June 20, 2018 2:58 PM
To: MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Subject: Request for Certificate Submission Confirmation

Please do not reply to this message.

Your Request for Certificate has been successfully signed and submitted to EPA. You can view the signed Request for Certificate package through the Submission History link on your MyCDX page or by using the following link:

Ex. 4 CBI

Updates on the status of your request will be sent to your CDX Inbox.

Ex. 4 CBI

This message is being sent to you as a confirmation of your submission. If you did not perform this submission please contact the Helpdesk: (888) 890-1995 and Email: evcishelpdesk@epacdx.net.

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immediately and delete it from your system. The views expressed in this E-mail message (including the enclosure/(s) or attachment/(s) if any) are those of the individual sender. ----------

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Message

From: MARTINS HENRIQUE [MARTINS.HENRIQUE@mahindra.com]
Sent: 7/31/2018 4:28:36 PM
To: LaCroix, John [lacroix.john@epa.gov]; Swain, David [swain.david@epa.gov]
CC: HORTON JOHN [HORTON.JOHN@mahindra.com]; FAHY JAMES [FAHY.JAMES@mahindra.com]
Subject: RE: Mahindra ROXOR 2019MY Application
Attachments: 003AUA00020N - Off Road Use Only_Barcoded_Adhesive_V2.pdf

Dear John Lacroix,

Thank you for informing that the label image could not be opened.
I am resending the picture in a pdf file this time.

Please confirm the pdf file can be opened.

Thanks and kind regards,

Henrique R. Martins

Sr Manager
Technical and Regulatory Affairs
Certification, Homologation, and Compliance
Mahindra Automotive North American Technical Center
1055 W Square Lake Road
Troy, MI 48098
(248) 268-6600

From: MARTINS HENRIQUE
Sent: Tuesday, July 31, 2018 11:19 AM
To: 'Swain, David' <swain.david@epa.gov>
Cc: 'LaCroix, John' <lacroix.john@epa.gov>; HORTON JOHN <HORTON.JOHN@mahindra.com>; FAHY JAMES <FAHY.JAMES@mahindra.com>
Subject: RE: Mahindra ROXOR 2019MY Application

Dear David Swain,

Following-up from our last call, find below an updated art-work draft for the "OFF-ROAD USE ONLY" label with the additional language warning against altering ROXOR to convert it into an on-road vehicle.
Please let us know if you agree with the language and we will release it to print.

Also, after our last call we learned that our product strategy team is planning to offer Ex. 4 CBI
Although this does not affect Emissions, it is a change in the "Supplemental Information to Application for Certification for Engine Family JMNCX2.52DM1" for 2018MY (2018MY CBI application, page 10).

Ex. 4 CBI

We expect to be able to submit our 2019MY application by tomorrow (August 1st, 2018).

Thanks and kind regards,

Henrique R. Martins

Sr Manager
Technical and Regulatory Affairs
Certification, Homologation, and Compliance
Mahindra Automotive North American Technical Center
1055 W Square Lake Road
Troy, MI 48098
(248) 268-6600

Mahindra Rise

From: MARTINS HENRIQUE
Sent: Monday, July 23, 2018 10:46 AM
To: 'Swain, David' <swain.david@epa.gov>
Cc: LaCroix, John <lacroix.john@epa.gov>; HORTON JOHN <HORTON.JOHN@mahindra.com>; FAHY JAMES <FAHY.JAMES@mahindra.com>
Subject: RE: Mahindra ROXOR 2019MY Application - "OFF-ROAD USE ONLY" label

Dear David Swain,

Following-up from our call on Friday, find below a draft proposal for the "OFF-ROAD USE ONLY" label with the additional language warning against altering ROXOR to convert it into an on-road vehicle.

Please review it and let us know if you agree with the language, so we will finalize formatting.

Thanks in advance and kind regards,

Henrique R. Martins

Sr Manager
Technical and Regulatory Affairs
Certification, Homologation, and Compliance
Mahindra Automotive North American Technical Center
1055 W Square Lake Road
Troy, MI 48098
(248) 268-6600

From: Swain, David <swain.david@epa.gov>
Sent: Friday, July 20, 2018 3:34 PM
To: MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Cc: LaCroix, John <lacroix.john@epa.gov>; HORTON JOHN <HORTON.JOHN@mahindra.com>; FAHY JAMES <FAHY.JAMES@mahindra.com>
Subject: RE: Mahindra ROXOR 2019MY Application

Please call me

-Dave
(734)214-4377

| U.S. Environmental Protection Agency |
| Compliance Division |
| Project engineer |
| 2000 Traverwood Drive |
| Ann Arbor, MI 48105 |

Please consider the environment before printing this email.

From: MARTINS HENRIQUE [mailto:MARTINS.HENRIQUE@mahindra.com]
Sent: Friday, July 20, 2018 2:01 PM
To: Swain, David <swain.david@epa.gov>
Cc: LaCroix, John <lacroix.john@epa.gov>; HORTON JOHN <HORTON.JOHN@mahindra.com>; FAHY JAMES <FAHY.JAMES@mahindra.com>
Subject: RE: Mahindra ROXOR 2019MY Application

Hi David,

Thank you for your response.

The plan for our 2019MY application will be to carryover our 2018MY application with minor updates.
The current drivetrain including exhaust systems, and associated EDV will be unchanged.

I would like to share basic information regarding these updates with you before we submit the application for your review:

Ex. 4 CBI

We are hoping to have a 2019MY introduction by September 1st.
Therefore we will soon submit our application through EPA VERIFY.

Thanks and kind regards,

Henrique R. Martins

Sr Manager
Technical and Regulatory Affairs
Certification, Homologation, and Compliance
Mahindra Automotive North American Technical Center
1055 W Square Lake Road
Troy, MI 48098
(248) 268-6600

From: Swain, David <swain.david@epa.gov>
Sent: Friday, July 20, 2018 11:31 AM
To: MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Cc: HORTON JOHN <HORTON.JOHN@mahindra.com>; FAHY JAMES <FAHY.JAMES@mahindra.com>; LaCroix, John <lacroix.john@epa.gov>
Subject: RE: Mahindra ROXOR 2019MY Application

Hi Henrique,
Can you please email a list of your concerns?
It's possible John (in the cc above) or I can answer your questions by email.
If you want to call me after the email, any time today is fine.
-Dave
(734)214-4377

| U.S. Environmental Protection Agency |
| Compliance Division |
| Project engineer |
| 2000 Traverwood Drive |
| Ann Arbor, MI 48105 |

Please consider the environment before printing this email.

From: MARTINS HENRIQUE [mailto:MARTINS.HENRIQUE@mahindra.com]
Sent: Friday, July 20, 2018 10:41 AM
To: Swain, David <swain.david@epa.gov>
Cc: HORTON JOHN <HORTON.JOHN@mahindra.com>; FAHY JAMES <FAHY.JAMES@mahindra.com>
Subject: Mahindra ROXOR 2019MY Application

Dear David Swain,

Following-up from one of our recent calls, we would like to have a brief discussion about the ROXOR 2019MY application.

Ex. 4 CBI

Although our 2019MY application will be pretty much a carry-over application, there are few issues we would like to discuss with you beforehand.

Would you suggest a couple of date/times that work for you during the week of July 30th – August 3rd?

This will be a short audio meeting and I will send you an agenda once we set-up the time and date.

Thanks and kind regards,

Henrique R. Martins

Sr Manager
Technical and Regulatory Affairs
Certification, Homologation, and Compliance
Mahindra Automotive North American Technical Center
1055 W Square Lake Road

Troy, MI 48098
(248) 268-6600

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WARNING
OFF-ROAD USE ONLY
This vehicle is designed and manufactured for OFF-ROAD USE ONLY and is NOT equipped for operation on public streets, roads, or highways. This vehicle is equipped with a USDA Forest Service qualified spark arrestor. Obey local laws and regulations. This vehicle does NOT conform to Federal Motor Vehicle Safety Standards (FMVSS) or US EPA On-Highway Exhaust Emission regulations, and modifying or altering the vehicle for operation on public streets, roads, or highways is ILLEGAL.
0003AUA00020N

Message

From: MARTINS HENRIQUE [MARTINS.HENRIQUE@mahindra.com]
Sent: 11/26/2018 11:20:00 PM
To: Swain, David [swain.david@epa.gov]
CC: Green, Donzell [green.donzell@epa.gov]; FAHY JAMES [FAHY.JAMES@mahindra.com]
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019 - SERVICE MANUAL PART 2
Attachments: MAN-00544_2018MY ROXOR REPAIR MANUAL - REV2_Part2.pdf

This email contains Part 2

From: MARTINS HENRIQUE
Sent: Monday, November 26, 2018 6:11 PM
To: Swain, David <swain.david@epa.gov>
Cc: Green, Donzell <green.donzell@epa.gov>; FAHY JAMES <FAHY.JAMES@mahindra.com>
Subject: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019 - SERVICE MANUAL PART 1

Dear David Swain,
As requested, we are sending you an electronic version of the service manual in a separate email.

Because the file was too large to send by email, we have divided it in 3 parts.
This email contains the first part. The other 2 will be sent in separate emails.

<< File: MAN-00544_2018MY ROXOR REPAIR MANUAL - REV2_Part1.pdf >>

Please let us know should you have any questions.

Thanks and kind regards,

Henrique R. Martins

Sr Manager
Technical and Regulatory Affairs
Certification, Homologation, and Compliance
Mahindra Automotive North American Technical Center
275 Rex Blvd
Auburn Hills, MI 48326
(248) 268-6600
<< OLE Object: Picture (Device Independent Bitmap) >>

From: MARTINS HENRIQUE
Sent: Monday, November 26, 2018 2:58 PM
To: 'Swain, David' <swain.david@epa.gov>
Cc: Green, Donzell <green.donzell@epa.gov>; 'fredryk.john@epa.gov' <fredryk.john@epa.gov>; HORTON JOHN

<HORTON.JOHN@mahindra.com>; FAHY JAMES <FAHY.JAMES@mahindra.com>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Dear David Swain,

I hope you have enjoyed a wonderful Thanksgiving.

I would like to inform that our Logistics department has booked to pick up the vehicle most likely today with delivery tomorrow, but with the weather situation it could possibly be Wed AM at the latest for delivery.
They have gave the carrier John Fredryk's info for delivery as stated in the "Test Order #18-ATV-PE-68" notification letter.

I will send you an electronic version of the service manual in a separate email.

Thanks and kind regards,

Henrique R. Martins

Sr Manager
Technical and Regulatory Affairs
Certification, Homologation, and Compliance
Mahindra Automotive North American Technical Center
275 Rex Blvd
Auburn Hills, MI 48326
(248) 268-6600

From: Swain, David <swain.david@epa.gov>
Sent: Wednesday, November 21, 2018 4:15 PM
To: MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Cc: Green, Donzell <green.donzell@epa.gov>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Do you also have the service manual in electronic format?

From: MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Sent: Wednesday, November 21, 2018 4:12 PM
To: Swain, David <swain.david@epa.gov>
Cc: Green, Donzell <green.donzell@epa.gov>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Dear David,
As requested, please find attached an electronic version of the Operators Guide containing Maintenance Procedures.
I have issue a request to my logistic department to ship the vehicle from Ex. 4 CBI to the EPA lab, I will let you know as soon as I receive confirmation of the shipment date.

Thanks and kind regards,
Henrique R. Martins

Sr Manager

Technical and Regulatory Affairs
Certification, Homologation, and Compliance
Mahindra Automotive North American Technical Center
275 Rex Blvd
Auburn Hills, MI 48326
(248) 268-6600
<< OLE Object: Picture (Device Independent Bitmap) >>

From: Swain, David <swain.david@epa.gov>
Sent: Wednesday, November 21, 2018 12:40 PM
To: MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Cc: Green, Donzell <green.donzell@epa.gov>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Also, do you have an electronic version of the service manual that you can mail Donzell and me?

Thank !
-Dave

From: MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Sent: Tuesday, November 20, 2018 3:37 PM
To: Swain, David <swain.david@epa.gov>
Cc: Green, Donzell <green.donzell@epa.gov>; FAHY JAMES <FAHY.JAMES@mahindra.com>; HORTON JOHN <HORTON.JOHN@mahindra.com>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Dear David,
Find attached the driver's trace for the test performed at Ex. 4 CBI earlier this year.

Please let us know a date that is convenient to ship the vehicle to the EPA laboratory.

Thanks and kind regards,

Henrique R. Martins

Sr Manager
Technical and Regulatory Affairs
Certification, Homologation, and Compliance
Mahindra Automotive North American Technical Center
275 Rex Blvd
Auburn Hills, MI 48326
(248) 268-6600
<< OLE Object: Picture (Device Independent Bitmap) >>

From: Swain, David <swain.david@epa.gov>
Sent: Monday, November 19, 2018 7:01 PM
To: HORTON JOHN <HORTON.JOHN@mahindra.com>; MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Cc: Green, Donzell <green.donzell@epa.gov>; FAHY JAMES <FAHY.JAMES@mahindra.com>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Thank-you ! Do you have the driver's trace too?

From: HORTON JOHN <HORTON.JOHN@mahindra.com>
Sent: Friday, November 16, 2018 7:15 PM
To: Swain, David <swain.david@epa.gov>; MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Cc: Green, Donzell <green.donzell@epa.gov>; FAHY JAMES <FAHY.JAMES@mahindra.com>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

David,

Per your request.
These results were from a development test at another facility Ex. 4 CBI earlier this year.

Total Result (weighted)

Weighted	THC[g/mile]	CO[g/mile]	CO_2[g/mile]	NO_x[g/mile]	CH_4[g/mile]	N_2O[g/mile]	NMHC[g/mile]	HC+NO_x[g/mile]	***Fuel Economy***
Mass per Dist.	Ex. 4 CBI								
Mass per Dist. (rounded									
Mass per Dist. (rounded per km									

Particulate Result

	Bag 1	Bag 2	Bag 3	Bag 4
Filter ID	Ex. 4 CBI			
Particulate Sample Mass				
Mass Corr Factor				

Mass of Particulate Emission		Ex. 4 CBI
Specific Particulate Emission (BG Corr)	g/m	
Weighted Specific Particulate Emissions	g/m	

From: Swain, David <swain.david@epa.gov>
Sent: Friday, November 16, 2018 6:49 PM
To: HORTON JOHN <HORTON.JOHN@mahindra.com>; MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Cc: Green, Donzell <green.donzell@epa.gov>; FAHY JAMES <FAHY.JAMES@mahindra.com>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Thank-you Mr. Horton,
Is it possible you and/or Henrique can please share the PM data again?
I can't locate it.

Thanks,
-Dave Swain

From: HORTON JOHN <HORTON.JOHN@mahindra.com>
Sent: Friday, November 16, 2018 7:41 AM
To: Swain, David <swain.david@epa.gov>; MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Cc: Green, Donzell <green.donzell@epa.gov>; FAHY JAMES <FAHY.JAMES@mahindra.com>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

David,

Henrique is on vacation so I will answer in his stead.

Ex. 4 CBI

Ex. 4 CBI

The vehicle is ready to ship.

Regards,

John Horton
Sr. Emissions Compliance Engineer
Office of Technical and Regulatory Affairs
Mahindra North American Technical Center
275 Rex Blvd Auburn Hills, MI 48326, USA
Email: horton.john@mahindra.com
Ex. 6 Personal Privacy (PP)
<< OLE Object: Picture (Device Independent Bitmap) >>

From: Swain, David <swain.david@epa.gov>
Sent: Thursday, November 15, 2018 6:22 PM
To: MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Cc: Green, Donzell <green.donzell@epa.gov>; HORTON JOHN <HORTON.JOHN@mahindra.com>; FAHY JAMES <FAHY.JAMES@mahindra.com>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Thank-you Henrique.
I did not ask for you to test it, but I was very interested in any results you have. Rather than make an estimate for which of our test cells is most appropriate to use to test it, your results will help guide me, so I appreciate it.

Also, did you take any particulate measurements or N2O measurements?

We are nearly ready to receive it. I will know more Monday, if it is ok to ship.

Thank-you,
-David Swain

From: MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Sent: Wednesday, November 14, 2018 2:26 PM
To: Swain, David <swain.david@epa.gov>
Cc: Green, Donzell <green.donzell@epa.gov>; HORTON JOHN <HORTON.JOHN@mahindra.com>; FAHY JAMES <FAHY.JAMES@mahindra.com>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Dear David,
As per your request, Ex. 4 CBI o performed Emissions testing yesterday. The test was executed by Ex. 4 CBI without the presence of MNATC, Inc. personnel.
The results are compliant and consistent with other testing (please find the testing results attached to this email).

The vehicle custody form needs to be updated to reflect this additional activity (the emissions testing), please let me know if I can send you the updated form by email.
Please let me also know a date that is convenient to ship the vehicle to the EPA laboratory.

Thanks and kind regards,

Henrique R. Martins

Sr Manager
Technical and Regulatory Affairs
Certification, Homologation, and Compliance
Mahindra Automotive North American Technical Center
275 Rex Blvd
Auburn Hills, MI 48326
(248) 268-6600
<< OLE Object: Picture (Device Independent Bitmap) >>

From: MARTINS HENRIQUE
Sent: Friday, November 9, 2018 4:06 PM
To: Swain, David <swain.david@epa.gov>
Cc: Green, Donzell <green.donzell@epa.gov>; HORTON JOHN <HORTON.JOHN@mahindra.com>; FAHY JAMES <FAHY.JAMES@mahindra.com>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Dear David,
Thank you for the quick response.
I will contact Ex. 4 CBI and inquire about their availability and then inform you whether we will need extension on the required delivery date.

Thanks and kind regards,

Henrique R. Martins

Sr Manager
Technical and Regulatory Affairs
Certification, Homologation, and Compliance
Mahindra Automotive North American Technical Center
275 Rex Blvd
Auburn Hills, MI 48326
(248) 268-6600
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From: Swain, David <swain.david@epa.gov>
Sent: Friday, November 9, 2018 4:01 PM
To: MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Cc: Green, Donzell <green.donzell@epa.gov>; HORTON JOHN <HORTON.JOHN@mahindra.com>; FAHY JAMES <FAHY.JAMES@mahindra.com>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Hi Henrique,

I am interested in comparing your results with ours, because we do not normally test vehicles that do not have traps. But if Ex. 4 CBI does not have available testing within the next week, I understand. Upon request, we can extend any required delivery date if the reason is that you need to wait for a testing slot to become available.

-Dave

From: MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Sent: Friday, November 09, 2018 3:54 PM
To: Swain, David <swain.david@epa.gov>
Cc: Green, Donzell <green.donzell@epa.gov>; HORTON JOHN <HORTON.JOHN@mahindra.com>; FAHY JAMES <FAHY.JAMES@mahindra.com>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Dear David,
We have only requested Ex. 4 CBI to carry-out service accumulation as instructed in the Test Order 18-ATVB-PE-68.
Please inform us if EPA wants any additional preparations that were not listed in the Test Order 18-ATVB-PE-68 to be performed prior to delivery.
Also, please let us know a date that is more convenient for EPA for the shipment.

Meanwhile I will communicate our logistics team to cancel the shipment on Nov 12, 2018 and wait for your direction.

Thanks and kind regards,
Henrique R. Martins

Sr Manager
Technical and Regulatory Affairs
Certification, Homologation, and Compliance
Mahindra Automotive North American Technical Center
275 Rex Blvd
Auburn Hills, MI 48326
(248) 268-6600
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From: Swain, David <swain.david@epa.gov>
Sent: Friday, November 9, 2018 2:25 PM
To: MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Cc: Green, Donzell <green.donzell@epa.gov>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Please do not ship it yet.
Have you tested it?

From: MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Sent: Friday, November 09, 2018 11:37 AM
To: Swain, David <swain.david@epa.gov>
Cc: Green, Donzell <green.donzell@epa.gov>; Hoban, John <Hoban.John@epa.gov>; HORTON JOHN <HORTON.JOHN@mahindra.com>; FAHY JAMES <FAHY.JAMES@mahindra.com>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Dear David,
This email is to inform you that the Service Accumulation is now complete.
I went to Ex. 4 CBI yesterday to review and sign the forms listed in attachments 1,2 and 3 of the Test Order letter sent by EPA.

A binder containing all the forms (as all as other required documents like Operator's Guide) in inside the storage compartment located under the driver seat.
The storage compartment is locked (keys are on the same key holder as the ignition keys) and the binder is wrapped in a plastic bag.

We are taking care of the arrangements to ship the vehicle to the EPA test laboratory. Shipment is planned for Nov 12, 2018.
Our shipping request has the contact information supplied in the Test Order letter sent by EPA.
Please let me know if this date is convenient to EPA or if you would suggest another date.
Also, please let us know should you have additional instructions for the delivery.

I will fill attachment 4 with the list of representatives to witness the test vehicle set-up as soon as EPA confirms the test date.

Thanks and kind regards,

Henrique R. Martins

Sr Manager
Technical and Regulatory Affairs
Certification, Homologation, and Compliance
Mahindra Automotive North American Technical Center
275 Rex Blvd
Auburn Hills, MI 48326
(248) 268-6600
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From: MARTINS HENRIQUE
Sent: Friday, November 2, 2018 3:22 PM
To: 'Swain, David' <swain.david@epa.gov>
Cc: 'Green, Donzell' <green.donzell@epa.gov>; 'Hoban, John' <Hoban.John@epa.gov>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Dear David,

So far, based on the information we have from Ex. 4 CBI we do not believe we will need extension on the test order.
When the vehicle is ready to ship from Ex. 4 CBI we will notify you (and cc Donzell Green and John Hoban as per your request).

Thanks and kind regards,

Henrique R. Martins

Sr Manager
Technical and Regulatory Affairs
Certification, Homologation, and Compliance
Mahindra Automotive North American Technical Center
275 Rex Blvd
Auburn Hills, MI 48326
(248) 268-6600
<< OLE Object: Picture (Device Independent Bitmap) >>

From: Swain, David <swain.david@epa.gov>
Sent: Friday, November 2, 2018 11:03 AM
To: MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Cc: Ex. 4 CBI HORTON JOHN <HORTON.JOHN@mahindra.com>; FAHY JAMES <FAHY.JAMES@mahindra.com>; Green, Donzell <green.donzell@epa.gov>; Hoban, John <Hoban.John@epa.gov>; Chen, Emily <Chen.Emily@epa.gov>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Mr. Martins,
If Mahindra would like EPA to extend the test order delivery date to NVFEL, we can do this informally via email. Please email me the request, and please make sure to keep Donzell Green and John Hoban in the cc.

Please do not contact John Hoban. Please only keep him in the cc of all correspondence until further notice.

Thank-you,
-David Swain

From: MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Sent: Friday, November 02, 2018 10:34 AM
To: Swain, David <swain.david@epa.gov>; Green, Donzell <green.donzell@epa.gov>; Jackson, Cleophas <jackson.cleophas@epa.gov>
Cc: Ex. 4 CBI HORTON JOHN <HORTON.JOHN@mahindra.com>; FAHY JAMES <FAHY.JAMES@mahindra.com>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Dear David,
Based on an email we recently received from Ex. 4 CBI is planning on maintenance of their Emissions benches until November 12, 2018 (Ex. 4 CBI could you please confirm?).
Please let us know your decision regarding the test location and we will make sure to supply the vehicle at the date and place required by EPA.

Thanks and kind regards,

Henrique R. Martins

Sr Manager
Technical and Regulatory Affairs
Certification, Homologation, and Compliance
Mahindra Automotive North American Technical Center
275 Rex Blvd
Auburn Hills, MI 48326
(248) 268-6600
<< OLE Object: Picture (Device Independent Bitmap) >>

From: Swain, David <swain.david@epa.gov>
Sent: Thursday, November 1, 2018 12:25 PM
To: MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Cc: Ex. 4 CBI Green, Donzell <green.donzell@epa.gov>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Mr. Martins,
Please reply-all. Wil Ex. 4 CBI be able to perform an emissions test?
Thank-you,

-David Swain

From: MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Sent: Wednesday, October 31, 2018 10:52 AM
To: Jackson, Cleophas <jackson.cleophas@epa.gov>; Swain, David <swain.david@epa.gov>; Green, Donzell <green.donzell@epa.gov>
Cc: HORTON JOHN <HORTON.JOHN@mahindra.com>; FAHY JAMES <FAHY.JAMES@mahindra.com>
Subject: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Dear All,

This note is to inform you that the ROXOR vehicle selected by EPA for Compliance testing was shipped to Ex. 4 CBI esterday. According to Ex. 4 CBI personnel, service accumulation will be initiated today and should be completed by sometime tomorrow.

The contacts of the Ex. 4 CBI personnel managing the service accumulation are:

Ex. 4 CBI

Please let me know the date the test will be scheduled and confirm the test location, so I can fill out the "Statement of Manufacturer Intent to Witness Test Vehicle Set-up" form.
Also, I wanted to let you know the communication I received regarding this test order (Test Order 18-ATVB-PE-68) only contains attachment 1, 3 and 4.
Please let me know in case you also require attachment 2 to be filled and submitted.
Finally, please send me the document you referred during our meeting as "Blue Sheet" so I can fill it out and submit to you.

Thanks and kind regards,

Henrique R. Martins

Sr Manager
Technical and Regulatory Affairs
Certification, Homologation, and Compliance
Mahindra Automotive North American Technical Center
275 Rex Blvd
Auburn Hills, MI 48326
(248) 268-6600

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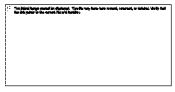

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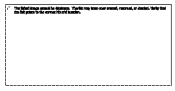

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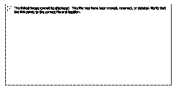

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Message

From: MARTINS HENRIQUE [MARTINS.HENRIQUE@mahindra.com]
Sent: 11/14/2018 7:26:19 PM
To: Swain, David [swain.david@epa.gov]
CC: Green, Donzell [green.donzell@epa.gov]; HORTON JOHN [HORTON.JOHN@mahindra.com]; FAHY JAMES [FAHY.JAMES@mahindra.com]
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019
Attachments: 2018111308-(2018_11_13)-(15-13-58)-Diesel - Mahindra ROXOR FTP.XLS

Dear David,
As per your request, Ex. 4 CBI to performed Emissions testing yesterday. The test was executed by Ex. 4 CBI without the presence of MNATC, Inc. personnel.
The results are compliant and consistent with other testing (please find the testing results attached to this email).
The vehicle custody form needs to be updated to reflect this additional activity (the emissions testing), please let me know if I can send you the updated form by email.
Please let me also know a date that is convenient to ship the vehicle to the EPA laboratory.

Thanks and kind regards,

Henrique R. Martins

Sr Manager
Technical and Regulatory Affairs
Certification, Homologation, and Compliance
Mahindra Automotive North American Technical Center
275 Rex Blvd
Auburn Hills, MI 48326
(248) 268-6600

Mahindra Rise.

From: MARTINS HENRIQUE
Sent: Friday, November 9, 2018 4:06 PM
To: Swain, David <swain.david@epa.gov>
Cc: Green, Donzell <green.donzell@epa.gov>; HORTON JOHN <HORTON.JOHN@mahindra.com>; FAHY JAMES <FAHY.JAMES@mahindra.com>
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Dear David,
Thank you for the quick response.
I will contact Ex. 4 CBI and inquire about their availability and then inform you whether we will need extension on the required delivery date.

Thanks and kind regards,

Henrique R. Martins

Sr Manager
Technical and Regulatory Affairs
Certification, Homologation, and Compliance
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275 Rex Blvd
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Cc: Green, Donzell <green.donzell@epa.gov>; HORTON JOHN <HORTON.JOHN@mahindra.com>; FAHY JAMES <FAHY.JAMES@mahindra.com>
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Sent: Friday, November 09, 2018 3:54 PM
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Meanwhile I will communicate our logistics team to cancel the shipment on Nov 12, 2018 and wait for your direction.

Thanks and kind regards,
Henrique R. Martins

Sr Manager
Technical and Regulatory Affairs
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From: Swain, David <swain.david@epa.gov>
Sent: Friday, November 9, 2018 2:25 PM

To: MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Cc: Green, Donzell <green.donzell@epa.gov>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

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Have you tested it?

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Sent: Friday, November 09, 2018 11:37 AM
To: Swain, David <swain.david@epa.gov>
Cc: Green, Donzell <green.donzell@epa.gov>; Hoban, John <Hoban.John@epa.gov>; HORTON JOHN <HORTON.JOHN@mahindra.com>; FAHY JAMES <FAHY.JAMES@mahindra.com>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Dear David,
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A binder containing all the forms (as all as other required documents like Operator's Guide) in inside the storage compartment located under the driver seat.
The storage compartment is locked (keys are on the same key holder as the ignition keys) and the binder is wrapped in a plastic bag.

We are taking care of the arrangements to ship the vehicle to the EPA test laboratory. Shipment is planned for Nov 12, 2018.
Our shipping request has the contact information supplied in the Test Order letter sent by EPA.
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Also, please let us know should you have additional instructions for the delivery.

I will fill attachment 4 with the list of representatives to witness the test vehicle set-up as soon as EPA confirms the test date.

Thanks and kind regards,

Henrique R. Martins

Sr Manager
Technical and Regulatory Affairs
Certification, Homologation, and Compliance
Mahindra Automotive North American Technical Center
275 Rex Blvd
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(248) 268-6600

From: MARTINS HENRIQUE
Sent: Friday, November 2, 2018 3:22 PM
To: 'Swain, David' <swain.david@epa.gov>
Cc: 'Green, Donzell' <green.donzell@epa.gov>; 'Hoban, John' <Hoban.John@epa.gov>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Dear David,

So far, based on the information we have from Ex. 4 CBI we do not believe we will need extension on the test order. When the vehicle is ready to ship from Ex. 4 CBI we will notify you (and cc Donzell Green and John Hoban as per your request).

Thanks and kind regards,

Henrique R. Martins

Sr Manager
Technical and Regulatory Affairs
Certification, Homologation, and Compliance
Mahindra Automotive North American Technical Center
275 Rex Blvd
Auburn Hills, MI 48326
(248) 268-6600

From: Swain, David <swain.david@epa.gov>
Sent: Friday, November 2, 2018 11:03 AM
To: MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Cc: Ex. 4 CBI HORTON JOHN <HORTON.JOHN@mahindra.com>; FAHY JAMES <FAHY.JAMES@mahindra.com>; Green, Donzell <green.donzell@epa.gov>; Hoban, John <Hoban.John@epa.gov>; Chen, Emily <Chen.Emily@epa.gov>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Mr. Martins,
If Mahindra would like EPA to extend the test order delivery date to NVFEL, we can do this informally via email. Please email me the request, and please make sure to keep Donzell Green and John Hoban in the cc.

Please do not contact John Hoban. Please only keep him in the cc of all correspondence until further notice.

Thank-you,
-David Swain

From: MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Sent: Friday, November 02, 2018 10:34 AM
To: Swain, David <swain.david@epa.gov>; Green, Donzell <green.donzell@epa.gov>; Jackson, Cleophas <jackson.cleophas@epa.gov>
Cc: Ex. 4 CBI HORTON JOHN <HORTON.JOHN@mahindra.com>; FAHY JAMES <FAHY.JAMES@mahindra.com>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Dear David,
Based on an email we recently received from Ex. 4 CBI s planning on maintenance of their Emissions benches until November 12, 2018 (Ex. 4 CBI could you please confirm?).
Please let us know your decision regarding the test location and we will make sure to supply the vehicle at the date and place required by EPA.

Thanks and kind regards,

Henrique R. Martins

Sr Manager
Technical and Regulatory Affairs
Certification, Homologation, and Compliance
Mahindra Automotive North American Technical Center
275 Rex Blvd
Auburn Hills, MI 48326
(248) 268-6600

From: Swain, David <swain.david@epa.gov>
Sent: Thursday, November 1, 2018 12:25 PM
To: MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Cc: websterk@TRCPG.com; Green, Donzell <green.donzell@epa.gov>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Mr. Martins,
Please reply-all. Will Ex. 4 CBI be able to perform an emissions test?
Thank-you,
-David Swain

From: MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Sent: Wednesday, October 31, 2018 10:52 AM
To: Jackson, Cleophas <jackson.cleophas@epa.gov>; Swain, David <swain.david@epa.gov>; Green, Donzell <green.donzell@epa.gov>
Cc: HORTON JOHN <HORTON.JOHN@mahindra.com>; FAHY JAMES <FAHY.JAMES@mahindra.com>
Subject: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Dear All,

This note is to inform you that the ROXOR vehicle selected by EPA for Compliance testing was shipped to Ex. 4 CBI yesterday. According to Ex. 4 CBI personnel, service accumulation will be initiated today and should be completed by sometime tomorrow.

The contacts of the Ex. 4 CBI personnel managing the service accumulation are:

Ex. 4 CBI

Please let me know the date the test will be scheduled and confirm the test location, so I can fill out the "Statement of Manufacturer Intent to Witness Test Vehicle Set-up" form.

Also, I wanted to let you know the communication I received regarding this test order (Test Order 18-ATVB-PE-68) only contains attachment 1, 3 and 4.
Please let me know in case you also require attachment 2 to be filled and submitted.
Finally, please send me the document you referred during our meeting as "Blue Sheet" so I can fill it out and submit to you.

Thanks and kind regards,

Henrique R. Martins

Sr Manager
Technical and Regulatory Affairs
Certification, Homologation, and Compliance
Mahindra Automotive North American Technical Center
275 Rex Blvd
Auburn Hills, MI 48326
(248) 268-6600

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Message

From: MARTINS HENRIQUE [MARTINS.HENRIQUE@mahindra.com]
Sent: 11/26/2018 11:11:26 PM
To: Swain, David [swain.david@epa.gov]
CC: Green, Donzell [green.donzell@epa.gov]; FAHY JAMES [FAHY.JAMES@mahindra.com]
Subject: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019 - SERVICE MANUAL PART 1
Attachments: MAN-00544_2018MY ROXOR REPAIR MANUAL - REV2_Part1.pdf

Dear David Swain,
As requested, we are sending you an electronic version of the service manual in a separate email.

Because the file was too large to send by email, we have divided it in 3 parts.
This email contains the first part. The other 2 will be sent in separate emails.

Please let us know should you have any questions.

Thanks and kind regards,

Henrique R. Martins

Sr Manager
Technical and Regulatory Affairs
Certification, Homologation, and Compliance
Mahindra Automotive North American Technical Center
275 Rex Blvd
Auburn Hills, MI 48326
(248) 268-6600

From: MARTINS HENRIQUE
Sent: Monday, November 26, 2018 2:58 PM
To: 'Swain, David' <swain.david@epa.gov>
Cc: Green, Donzell <green.donzell@epa.gov>; 'fredryk.john@epa.gov' <fredryk.john@epa.gov>; HORTON JOHN <HORTON.JOHN@mahindra.com>; FAHY JAMES <FAHY.JAMES@mahindra.com>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Dear David Swain,

I hope you have enjoyed a wonderful Thanksgiving.

I would like to inform that our Logistics department has booked to pick up the vehicle most likely today with delivery tomorrow, but with the weather situation it could possibly be Wed AM at the latest for delivery.
They have gave the carrier John Fredryk's info for delivery as stated in the "Test Order #18-ATV-PE-68" notification letter.

I will send you an electronic version of the service manual in a separate email.

Thanks and kind regards,

Henrique R. Martins

Sr Manager
Technical and Regulatory Affairs
Certification, Homologation, and Compliance
Mahindra Automotive North American Technical Center
275 Rex Blvd
Auburn Hills, MI 48326
(248) 268-6600

From: Swain, David <swain.david@epa.gov>
Sent: Wednesday, November 21, 2018 4:15 PM
To: MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Cc: Green, Donzell <green.donzell@epa.gov>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Do you also have the service manual in electronic format?

From: MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Sent: Wednesday, November 21, 2018 4:12 PM
To: Swain, David <swain.david@epa.gov>
Cc: Green, Donzell <green.donzell@epa.gov>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Dear David,
As requested, please find attached an electronic version of the Operators Guide containing Maintenance Procedures. I have issue a request to my logistic department to ship the vehicle from Ex. 4 CBI to the EPA lab, I will let you know as soon as I receive confirmation of the shipment date.

Thanks and kind regards,
Henrique R. Martins

Sr Manager
Technical and Regulatory Affairs
Certification, Homologation, and Compliance
Mahindra Automotive North American Technical Center
275 Rex Blvd
Auburn Hills, MI 48326
(248) 268-6600

From: Swain, David <swain.david@epa.gov>
Sent: Wednesday, November 21, 2018 12:40 PM
To: MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>

Cc: Green, Donzell <green.donzell@epa.gov>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Also, do you have an electronic version of the service manual that you can mail Donzell and me?

Thank !
-Dave

From: MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Sent: Tuesday, November 20, 2018 3:37 PM
To: Swain, David <swain.david@epa.gov>
Cc: Green, Donzell <green.donzell@epa.gov>; FAHY JAMES <FAHY.JAMES@mahindra.com>; HORTON JOHN <HORTON.JOHN@mahindra.com>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Dear David,
Find attached the driver's trace for the test performed a Ex. 4 CBI arlier this year.

Please let us know a date that is convenient to ship the vehicle to the EPA laboratory.

Thanks and kind regards,

Henrique R. Martins

Sr Manager
Technical and Regulatory Affairs
Certification, Homologation, and Compliance
Mahindra Automotive North American Technical Center
275 Rex Blvd
Auburn Hills, MI 48326
(248) 268-6600

From: Swain, David <swain.david@epa.gov>
Sent: Monday, November 19, 2018 7:01 PM
To: HORTON JOHN <HORTON.JOHN@mahindra.com>; MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Cc: Green, Donzell <green.donzell@epa.gov>; FAHY JAMES <FAHY.JAMES@mahindra.com>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Thank-you ! Do you have the driver's trace too?

From: HORTON JOHN <HORTON.JOHN@mahindra.com>
Sent: Friday, November 16, 2018 7:15 PM
To: Swain, David <swain.david@epa.gov>; MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Cc: Green, Donzell <green.donzell@epa.gov>; FAHY JAMES <FAHY.JAMES@mahindra.com>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

David,

Per your request.

These results were from a development test at another facility Ex. 4 CBI earlier this year.

Total Result (weighted)

Ex. 4 CBI

Particulate Result

	Bag 1	Bag 2	Bag 3	Bag 4
Filter ID				
Particulate Sample Mass				
Mass Corr Factor				
Mass of Particulate Emission				
Specific Particulate Emission (BG Corr) g/m				
Weighted Specific Particulate Emissions g/m				

Ex. 4 CBI

From: Swain, David <swain.david@epa.gov>
Sent: Friday, November 16, 2018 6:49 PM
To: HORTON JOHN <HORTON.JOHN@mahindra.com>; MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Cc: Green, Donzell <green.donzell@epa.gov>; FAHY JAMES <FAHY.JAMES@mahindra.com>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Thank-you Mr. Horton,
Is it possible you and/or Henrique can please share the PM data again?
I can't locate it.

Thanks,
-Dave Swain

From: HORTON JOHN <HORTON.JOHN@mahindra.com>
Sent: Friday, November 16, 2018 7:41 AM
To: Swain, David <swain.david@epa.gov>; MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Cc: Green, Donzell <green.donzell@epa.gov>; FAHY JAMES <FAHY.JAMES@mahindra.com>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

David,

Henrique is on vacation so I will answer in his stead.

Ex. 4 CBI

The vehicle is ready to ship.

Regards,

John Horton
Sr. Emissions Compliance Engineer
Office of Technical and Regulatory Affairs
Mahindra North American Technical Center
275 Rex Blvd Auburn Hills, MI 48326, USA
Email: horton.john@mahindra.com
Ex. 6 Personal Privacy (PP)
<< OLE Object: Picture (Device Independent Bitmap) >>

From: Swain, David <swain.david@epa.gov>
Sent: Thursday, November 15, 2018 6:22 PM
To: MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Cc: Green, Donzell <green.donzell@epa.gov>; HORTON JOHN <HORTON.JOHN@mahindra.com>; FAHY JAMES <FAHY.JAMES@mahindra.com>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Thank-you Henrique.
I did not ask for you to test it, but I was very interested in any results you have. Rather than make an estimate for which of our test cells is most appropriate to use to test it, your results will help guide me, so I appreciate it.

Also, did you take any particulate measurements or N2O measurements?

We are nearly ready to receive it. I will know more Monday, if it is ok to ship.

Thank-you,
-David Swain

From: MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Sent: Wednesday, November 14, 2018 2:26 PM
To: Swain, David <swain.david@epa.gov>
Cc: Green, Donzell <green.donzell@epa.gov>; HORTON JOHN <HORTON.JOHN@mahindra.com>; FAHY JAMES <FAHY.JAMES@mahindra.com>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Dear David,
As per your request, Ex. 4 CBI o performed Emissions testing yesterday. The test was executed by Ex. 4 CBI without the presence of MNATC, Inc. personnel.
The results are compliant and consistent with other testing (please find the testing results attached to this email).
The vehicle custody form needs to be updated to reflect this additional activity (the emissions testing), please let me know if I can send you the updated form by email.
Please let me also know a date that is convenient to ship the vehicle to the EPA laboratory.

Thanks and kind regards,

Henrique R. Martins

Sr Manager
Technical and Regulatory Affairs
Certification, Homologation, and Compliance
Mahindra Automotive North American Technical Center
275 Rex Blvd
Auburn Hills, MI 48326
(248) 268-6600

From: MARTINS HENRIQUE
Sent: Friday, November 9, 2018 4:06 PM

To: Swain, David <swain.david@epa.gov>
Cc: Green, Donzell <green.donzell@epa.gov>; HORTON JOHN <HORTON.JOHN@mahindra.com>; FAHY JAMES <FAHY.JAMES@mahindra.com>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Dear David,
Thank you for the quick response.
I will contact Ex. 4 CBI and inquire about their availability and then inform you whether we will need extension on the required delivery date.

Thanks and kind regards,

Henrique R. Martins

Sr Manager
Technical and Regulatory Affairs
Certification, Homologation, and Compliance
Mahindra Automotive North American Technical Center
275 Rex Blvd
Auburn Hills, MI 48326
(248) 268-6600
<< OLE Object: Picture (Device Independent Bitmap) >>

From: Swain, David <swain.david@epa.gov>
Sent: Friday, November 9, 2018 4:01 PM
To: MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Cc: Green, Donzell <green.donzell@epa.gov>; HORTON JOHN <HORTON.JOHN@mahindra.com>; FAHY JAMES <FAHY.JAMES@mahindra.com>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Hi Henrique,
I am interested in comparing your results with ours, because we do not normally test vehicles that do not have traps. But if Ex. 4 CBI does not have available testing within the next week, I understand. Upon request, we can extend any required delivery date if the reason is that you need to wait for a testing slot to become available.

-Dave

From: MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Sent: Friday, November 09, 2018 3:54 PM
To: Swain, David <swain.david@epa.gov>
Cc: Green, Donzell <green.donzell@epa.gov>; HORTON JOHN <HORTON.JOHN@mahindra.com>; FAHY JAMES <FAHY.JAMES@mahindra.com>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Dear David,
We have only requested Ex. 4 CBI to carry-out service accumulation as instructed in the Test Order 18-ATVB-PE-68.
Please inform us if EPA wants any additional preparations that were not listed in the Test Order 18-ATVB-PE-68 to be performed prior to delivery.
Also, please let us know a date that is more convenient for EPA for the shipment.

Meanwhile I will communicate our logistics team to cancel the shipment on Nov 12, 2018 and wait for your direction.

Thanks and kind regards,
Henrique R. Martins

Sr Manager
Technical and Regulatory Affairs
Certification, Homologation, and Compliance
Mahindra Automotive North American Technical Center
275 Rex Blvd
Auburn Hills, MI 48326
(248) 268-6600

From: Swain, David <swain.david@epa.gov>
Sent: Friday, November 9, 2018 2:25 PM
To: MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Cc: Green, Donzell <green.donzell@epa.gov>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Please do not ship it yet.
Have you tested it?

From: MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Sent: Friday, November 09, 2018 11:37 AM
To: Swain, David <swain.david@epa.gov>
Cc: Green, Donzell <green.donzell@epa.gov>; Hoban, John <Hoban.John@epa.gov>; HORTON JOHN <HORTON.JOHN@mahindra.com>; FAHY JAMES <FAHY.JAMES@mahindra.com>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Dear David,
This email is to inform you that the Service Accumulation is now complete.
I went to Ex. 4 CBI yesterday to review and sign the forms listed in attachments 1,2 and 3 of the Test Order letter sent by EPA.
A binder containing all the forms (as all as other required documents like Operator's Guide) in inside the storage compartment located under the driver seat.
The storage compartment is locked (keys are on the same key holder as the ignition keys) and the binder is wrapped in a plastic bag.

We are taking care of the arrangements to ship the vehicle to the EPA test laboratory. Shipment is planned for Nov 12, 2018.
Our shipping request has the contact information supplied in the Test Order letter sent by EPA.
Please let me know if this date is convenient to EPA or if you would suggest another date.
Also, please let us know should you have additional instructions for the delivery.

I will fill attachment 4 with the list of representatives to witness the test vehicle set-up as soon as EPA confirms the test date.

Thanks and kind regards,
Henrique R. Martins

Sr Manager
Technical and Regulatory Affairs

Certification, Homologation, and Compliance
Mahindra Automotive North American Technical Center
275 Rex Blvd
Auburn Hills, MI 48326
(248) 268-6600

From: MARTINS HENRIQUE
Sent: Friday, November 2, 2018 3:22 PM
To: 'Swain, David' <swain.david@epa.gov>
Cc: 'Green, Donzell' <green.donzell@epa.gov>; 'Hoban, John' <Hoban.John@epa.gov>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Dear David,

So far, based on the information we have from Ex. 4 CBI we do not believe we will need extension on the test order. When the vehicle is ready to ship from Ex. 4 CBI we will notify you (and cc Donzell Green and John Hoban as per your request).

Thanks and kind regards,

Henrique R. Martins

Sr Manager
Technical and Regulatory Affairs
Certification, Homologation, and Compliance
Mahindra Automotive North American Technical Center
275 Rex Blvd
Auburn Hills, MI 48326
(248) 268-6600

From: Swain, David <swain.david@epa.gov>
Sent: Friday, November 2, 2018 11:03 AM
To: MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Cc: Ex. 4 CBI HORTON JOHN <HORTON.JOHN@mahindra.com>; FAHY JAMES <FAHY.JAMES@mahindra.com>; Green, Donzell <green.donzell@epa.gov>; Hoban, John <Hoban.John@epa.gov>; Chen, Emily <Chen.Emily@epa.gov>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Mr. Martins,
If Mahindra would like EPA to extend the test order delivery date to NVFEL, we can do this informally via email. Please email me the request, and please make sure to keep Donzell Green and John Hoban in the cc.

Please do not contact John Hoban. Please only keep him in the cc of all correspondence until further notice.

Thank-you,
-David Swain

From: MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Sent: Friday, November 02, 2018 10:34 AM
To: Swain, David <swain.david@epa.gov>; Green, Donzell <green.donzell@epa.gov>; Jackson, Cleophas <jackson.cleophas@epa.gov>
Cc: Ex. 4 CBI ORTON JOHN <HORTON.JOHN@mahindra.com>; FAHY JAMES <FAHY.JAMES@mahindra.com>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Dear David,
Based on an email we recently received from Ex. 4 CBI is planning on maintenance of their Emissions benches until November 12, 2018 Ex. 4 CBI could you please confirm?).
Please let us know your decision regarding the test location and we will make sure to supply the vehicle at the date and place required by EPA.

Thanks and kind regards,

Henrique R. Martins

Sr Manager
Technical and Regulatory Affairs
Certification, Homologation, and Compliance
Mahindra Automotive North American Technical Center
275 Rex Blvd
Auburn Hills, MI 48326
(248) 268-6600

From: Swain, David <swain.david@epa.gov>
Sent: Thursday, November 1, 2018 12:25 PM
To: MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Cc: Ex. 4 CBI Green, Donzell <green.donzell@epa.gov>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Mr. Martins,
Please reply-all. Will Ex. 4 CBI be able to perform an emissions test?
Thank-you,
-David Swain

From: MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Sent: Wednesday, October 31, 2018 10:52 AM
To: Jackson, Cleophas <jackson.cleophas@epa.gov>; Swain, David <swain.david@epa.gov>; Green, Donzell <green.donzell@epa.gov>
Cc: HORTON JOHN <HORTON.JOHN@mahindra.com>; FAHY JAMES <FAHY.JAMES@mahindra.com>
Subject: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Dear All,

This note is to inform you that the ROXOR vehicle selected by EPA for Compliance testing was shipped to Ex. 4 CBI yesterday. According to Ex. 4 CBI personnel, service accumulation will be initiated today and should be completed by sometime tomorrow.

The contacts of the Ex. 4 CBI personnel managing the service accumulation are:

Ex. 4 CBI

Please let me know the date the test will be scheduled and confirm the test location, so I can fill out the "Statement of Manufacturer Intent to Witness Test Vehicle Set-up" form.
Also, I wanted to let you know the communication I received regarding this test order (Test Order 18-ATVB-PE-68) only contains attachment 1, 3 and 4.
Please let me know in case you also require attachment 2 to be filled and submitted.
Finally, please send me the document you referred during our meeting as "Blue Sheet" so I can fill it out and submit to you.

Thanks and kind regards,

Henrique R. Martins

Sr Manager
Technical and Regulatory Affairs
Certification, Homologation, and Compliance
Mahindra Automotive North American Technical Center
275 Rex Blvd
Auburn Hills, MI 48326
(248) 268-6600
<< OLE Object: Picture (Device Independent Bitmap) >>

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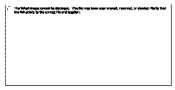

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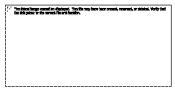

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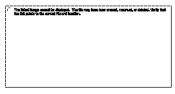

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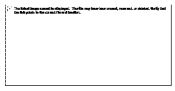

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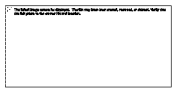

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Message

From: MARTINS HENRIQUE [MARTINS.HENRIQUE@mahindra.com]
Sent: 2/6/2019 1:47:27 AM
To: Swain, David [swain.david@epa.gov]
CC: HORTON JOHN [HORTON.JOHN@mahindra.com]
Subject: RE: Mahindra ROXOR - KMNCX2.52DM1/ DF testing after changes

Dear David Swain,

Ex. 4 CBI

Thanks in advance and kind regards,

Henrique R. Martins

Sr Manager
Technical and Regulatory Affairs
Certification, Homologation, and Compliance
Mahindra Automotive North American Technical Center
275 Rex Blvd
Auburn Hills, MI 48326
(248) 268-6600

From: MARTINS HENRIQUE
Sent: Tuesday, January 22, 2019 4:33 PM
To: Swain, David <swain.david@epa.gov>
Subject: RE: Mahindra ROXOR - KMNCX2.52DM1/ DF testing after changes

Dear David Swain,

Ex. 4 CBI

Ex. 4 CBI

Thank you and kind regards,

Henrique R. Martins

Sr Manager
Technical and Regulatory Affairs
Certification, Homologation, and Compliance
Mahindra Automotive North American Technical Center
275 Rex Blvd
Auburn Hills, MI 48326
(248) 268-6600

From: Swain, David <swain.david@epa.gov>
Sent: Thursday, December 20, 2018 7:22 PM
To: MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Subject: RE: Mahindra ROXOR - KMNCX2.52DM1/ DF testing after changes

Mr. Martins,

Ex. 4 CBI

-Dave Swain

From: MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Sent: Thursday, December 20, 2018 2:14 PM
To: Swain, David <swain.david@epa.gov>
Cc: HORTON JOHN <HORTON.JOHN@mahindra.com>
Subject: Mahindra ROXOR - KMNCX2.52DM1/ DF testing after changes

Dear David.

Ex. 4 CBI

Please see below for details of our planned approach:

Ex. 4 CBI

We believe this is a valid approach, but we would like to request EPA's feedback on the matter before we proceed further.

Ex. 4 CBI

Thanks and kind regards,

Henrique R. Martins

Sr Manager
Technical and Regulatory Affairs
Certification, Homologation, and Compliance
Mahindra Automotive North American Technical Center
275 Rex Blvd
Auburn Hills, MI 48326
(248) 268-6600

From: MARTINS HENRIQUE
Sent: Wednesday, December 12, 2018 2:08 PM
To: 'Swain, David' <swain.david@epa.gov>
Cc: HORTON JOHN <HORTON.JOHN@mahindra.com>
Subject: RE: DF testing after changes

Dear David,

Thank you for sharing EPA Ex. 4 CBI

Ex. 4 CBI

Our question is specific about the DF.

Ex. 4 CBI

We believe this is a valid approach, but we would like to request EPA's feedback on the matter before we proceed further.
Please let me know if EPA agrees Ex. 4 CBI

Ex. 4 CBI

Should you want to have a quick audio-conference to further discuss this matter, please let me know and we will be glad to arrange it.

Thanks and kind regards,

Henrique R. Martins

Sr Manager
Technical and Regulatory Affairs
Certification, Homologation, and Compliance
Mahindra Automotive North American Technical Center
275 Rex Blvd
Auburn Hills, MI 48326
(248) 268-6600

From: Swain, David <swain.david@epa.gov>
Sent: Thursday, December 6, 2018 1:58 PM
To: MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Cc: HORTON JOHN <HORTON.JOHN@mahindra.com>
Subject: DF testing after changes

Hi Henrique,
As we discussed, Ex. 4 CBI
-Dave

(734)214-4377
~~~
~~~

| Ann Arbor, MI 48105 |

Please consider the environment before printing this email.

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Message

From: MARTINS HENRIQUE [MARTINS.HENRIQUE@mahindra.com]
Sent: 6/14/2019 9:53:41 PM
To: DeBord, Steven [DeBord.Steven@epa.gov]
CC: Duncan, Allen [duncan.allen@epa.gov]; Smith, PeterL [Smith.PeterL@epa.gov]; Healy, Stephen [healy.stephen@epa.gov]; Schaefer, Ron [schaefer.ron@epa.gov]; Steele, Lauren [steele.lauren@epa.gov]; Hamady, Fakhri [hamady.fakhri@epa.gov]; Swain, David [swain.david@epa.gov]; PRANN JUSTIN [PRANN.JUSTIN@mahindra.com]; TAKASAWA KEITH [TAKASAWA.KEITH@mahindra.com]
Subject: RE: Engine Certification for entry into U.S. commerce - Privileged and Confidential
Attachments: Cert_KMNCX2.52DM1-001-R01.pdf

Dear Steven D. DeBord,

Thanks for reaching out to us.

Ex. 4 CBI

I hope this satisfactorily answers your questions. We believe that maintaining close working relationships and open lines of communication between EPA and ourselves is vital to success. Please do not hesitate to reach out to me directly if I can be of further assistance.

Thank you and kind regards,

Henrique R. Martins

Head of Technical and Regulatory Affairs
Certification, Homologation, and Compliance
Mahindra Automotive North American Technical Center
275 Rex Blvd
Auburn Hills, MI 48326
(248) 268-6600

From: Customer Service <customerservice@roxoroffroad.com>
Sent: Thursday, June 13, 2019 2:45 PM
To: PRANN JUSTIN <PRANN.JUSTIN@mahindra.com>
Subject: FW: Engine Certification for entry into U.S. commerce

Please see email below.

Thanks

From: DeBord, Steven <DeBord.Steven@epa.gov>
Sent: Thursday, June 13, 2019 2:43 PM
To: Customer Service <customerservice@roxoroffroad.com>
Cc: Duncan, Allen <duncan.allen@epa.gov>; Smith, PeterL <Smith.PeterL@epa.gov>; Healy, Stephen <healy.stephen@epa.gov>; Schaefer, Ron <schaefer.ron@epa.gov>; Steele, Lauren <steele.lauren@epa.gov>; Hamady,

Fakhri <hamady.fakhri@epa.gov>
Subject: Engine Certification for entry into U.S. commerce

Roxor,

Please contact EPA with a full description of EPA certification on the engines installed into these UTV's for entry into U.S. commerce.

Sincerely,

Steven D. DeBord
U.S. Environmental Protection Agency
OTAQ Compliance Division, Diesel Engine Compliance Center
WJC-N RM. 5512D
USEPA William Jefferson Clinton Building North (WJC North)
1200 Pennsylvania Avenue N.W.
Washington, DC 20004
202.343.9169

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
2019 MODEL YEAR
CERTIFICATE OF CONFORMITY
WITH THE CLEAN AIR ACT

OFFICE OF TRANSPORTATION AND AIR QUALITY
ANN ARBOR, MICHIGAN 48105

Certificate Issued To: Mahindra North American Technical Center, Inc.
(U.S. Manufacturer or Importer)

Certificate Number: KMNCX2.52DM1-001-R01

Effective Date: 08/17/2018

Expiration Date: 12/31/2019

Byron J. Bunker, Division Director
Compliance Division

Issue Date: 08/17/2018

Revision Date: 06/03/2019

Engine Family Name: KMNCX2.52DM1

Permeation Family Name(s):
KMNCPMETALA0

Evaporative Family Name:
N/A

Exhaust Emission Test Procedure:
40CFR86, Subpart E: Chassis test

Exhaust Emission Standards:
HC: N/A
CO: 35 g/km
HC+NOx: 1.5 g/km

Permeation Emission Standards (grams/m (day):
Fuel Tank: 1.5
Fuel Hose: 15.0

Vehicle/Engine Category: ATVB-Meeting EPA ATV Definition

Fuel Type(s): Diesel

Engine Type: 4-Stroke, 4-cylinders, Liquid Cooled

Engine Displacement(s) Covered (in cubic centimeters):
2523

Key Emission-Related Components:
1-Catalyst(s), EGR

Full Useful Life: EPA Required Minimum
Sales Area(s): 50 States
Models Covered:
ROXOR, ROXOR Dune Edition

Pursuant to §213 of the Clean Air Act (42 U.S.C. §7547) and 40 CFR Parts 1051, 1065 and 1068, this Certificate is hereby issued with respect to test vehicles or engines which have been found to conform to the requirements of the regulations on control of air pollution from new recreational vehicles and new recreational vehicle engines (40 CFR Parts 1051, 1065 and 1068) and which represent the vehicle models listed above by engine family and permeation/evaporative families, more fully described in the application of the above named manufacturer/importer. Vehicles or engines covered by this Certificate have demonstrated compliance with the applicable emission standards, as more fully described in the manufacturer/importer' s application. This Certificate covers the above models, which are designed to meet the applicable emission standards specified in 40 CFR Parts 1051.

EPA is issuing this Certificate subject to the conditions and provisions of 40 CFR Part 1051, Subpart D and G.

This Certificate covers only those vehicles which conform, in all material respects, to the design specifications that applied to those vehicles described in the documentation required by 40 CFR Parts 1051, 1065 and 1068 and are produced during the 2019 model year production period as defined in 40 CFR Parts 1051, 1065 and 1068. The manufacturer/importer shall obtain the approval of the California Air Resources Board (in the form of an Executive Order issued by the California Air Resources Board) prior to introducing any vehicle covered by this Certificate into commerce (1) in the State of California, or (2) in a State that, under the authority of §209(e) of the Clean Air Act, has adopted and placed into effect the California standards to which this engine family has been certified. This Certificate does not cover vehicles sold, offered for sale, introduced, or delivered for introduction into commerce in the U.S. prior to the effective date of the Certificate.

Message

From: Swain, David [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=19721755371B4F7382EC6A0AEBC0BC9A-SWAIN, DAVID]
Sent: 11/21/2018 9:14:59 PM
To: MARTINS HENRIQUE [MARTINS.HENRIQUE@mahindra.com]
CC: Green, Donzell [green.donzell@epa.gov]
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Do you also have the service manual in electronic format?

From: MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Sent: Wednesday, November 21, 2018 4:12 PM
To: Swain, David <swain.david@epa.gov>
Cc: Green, Donzell <green.donzell@epa.gov>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Dear David,
As requested, please find attached an electronic version of the Operators Guide containing Maintenance Procedures.
I have issue a request to my logistic department to ship the vehicle from Ex. 4 CBI to the EPA lab, I will let you know as soon as I receive confirmation of the shipment date.

Thanks and kind regards,

Henrique R. Martins

Sr Manager
Technical and Regulatory Affairs
Certification, Homologation, and Compliance
Mahindra Automotive North American Technical Center
275 Rex Blvd
Auburn Hills, MI 48326
(248) 268-6600

From: Swain, David <swain.david@epa.gov>
Sent: Wednesday, November 21, 2018 12:40 PM
To: MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Cc: Green, Donzell <green.donzell@epa.gov>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Also, do you have an electronic version of the service manual that you can mail Donzell and me?

Thank !
-Dave

From: MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Sent: Tuesday, November 20, 2018 3:37 PM
To: Swain, David <swain.david@epa.gov>
Cc: Green, Donzell <green.donzell@epa.gov>; FAHY JAMES <FAHY.JAMES@mahindra.com>; HORTON JOHN

<HORTON.JOHN@mahindra.com>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Dear David,
Find attached the driver's trace for the test performed at Ex. 4 CBI earlier this year.

Please let us know a date that is convenient to ship the vehicle to the EPA laboratory.

Thanks and kind regards,

Henrique R. Martins

Sr Manager
Technical and Regulatory Affairs
Certification, Homologation, and Compliance
Mahindra Automotive North American Technical Center
275 Rex Blvd
Auburn Hills, MI 48326
(248) 268-6600

From: Swain, David <swain.david@epa.gov>
Sent: Monday, November 19, 2018 7:01 PM
To: HORTON JOHN <HORTON.JOHN@mahindra.com>; MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Cc: Green, Donzell <green.donzell@epa.gov>; FAHY JAMES <FAHY.JAMES@mahindra.com>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Thank-you ! Do you have the driver's trace too?

From: HORTON JOHN <HORTON.JOHN@mahindra.com>
Sent: Friday, November 16, 2018 7:15 PM
To: Swain, David <swain.david@epa.gov>; MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Cc: Green, Donzell <green.donzell@epa.gov>; FAHY JAMES <FAHY.JAMES@mahindra.com>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

David,

Per your request.
These results were from a development test at another facility Ex. 4 CBI earlier this year.

Total Result (weighted)

Ex. 4 CBI ***ighted***	THC[g/mile]	CO[g/mile]	CO_2[g/mile]	NO_x[g/mile]	CH_4[g/mile]	N_2O[g/mile]	NMHC[g/mile]	HC+NO_x[g/mile]	***Fuel E***
Mass per Dist.	Ex. 4 CBI								
Mass per Dist. (rounded)									

Mass per Dist. (rounded) per km	Ex. 4 CBI

Particulate Result

	Bag 1	Bag 2	Bag 3	Bag 4
Filter ID	Ex. 4 CBI			
Particulate Sample Mass				
Mass Corr Factor				
Mass of Particulate Emission				
Specific Particulate Emission (BG Corr)				
Weighted Specific Particulate Emissions				

From: Swain, David <swain.david@epa.gov>
Sent: Friday, November 16, 2018 6:49 PM
To: HORTON JOHN <HORTON.JOHN@mahindra.com>; MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Cc: Green, Donzell <green.donzell@epa.gov>; FAHY JAMES <FAHY.JAMES@mahindra.com>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Thank-you Mr. Horton,
Is it possible you and/or Henrique can please share the PM data again?
I can't locate it.

Thanks,
-Dave Swain

From: HORTON JOHN <HORTON.JOHN@mahindra.com>
Sent: Friday, November 16, 2018 7:41 AM
To: Swain, David <swain.david@epa.gov>; MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Cc: Green, Donzell <green.donzell@epa.gov>; FAHY JAMES <FAHY.JAMES@mahindra.com>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

David,

Henrique is on vacation so I will answer in his stead.

Ex. 4 CBI

The vehicle is ready to ship.

Regards,

John Horton
Sr. Emissions Compliance Engineer
Office of Technical and Regulatory Affairs
Mahindra North American Technical Center
275 Rex Blvd Auburn Hills, MI 48326, USA
Email: horton.john@mahindra.com
Ex. 6 Personal Privacy (PP)
mahindra
Rise.

From: Swain, David <swain.david@epa.gov>
Sent: Thursday, November 15, 2018 6:22 PM
To: MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Cc: Green, Donzell <green.donzell@epa.gov>; HORTON JOHN <HORTON.JOHN@mahindra.com>; FAHY JAMES <FAHY.JAMES@mahindra.com>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Thank-you Henrique.
I did not ask for you to test it, but I was very interested in any results you have. Rather than make an estimate for which of our test cells is most appropriate to use to test it, your results will help guide me, so I appreciate it.

Also, did you take any particulate measurements or N2O measurements?

We are nearly ready to receive it. I will know more Monday, if it is ok to ship.

Thank-you,
-David Swain

From: MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Sent: Wednesday, November 14, 2018 2:26 PM
To: Swain, David <swain.david@epa.gov>
Cc: Green, Donzell <green.donzell@epa.gov>; HORTON JOHN <HORTON.JOHN@mahindra.com>; FAHY JAMES <FAHY.JAMES@mahindra.com>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Dear David,
As per your request Ex. 4 CBI p performed Emissions testing yesterday. The test was executed by Ex. 4 CBI without the presence of MNATC, Inc. personnel.
The results are compliant and consistent with other testing (please find the testing results attached to this email).
The vehicle custody form needs to be updated to reflect this additional activity (the emissions testing), please let me know if I can send you the updated form by email.
Please let me also know a date that is convenient to ship the vehicle to the EPA laboratory.

Thanks and kind regards,

Henrique R. Martins

Sr Manager
Technical and Regulatory Affairs
Certification, Homologation, and Compliance
Mahindra Automotive North American Technical Center
275 Rex Blvd
Auburn Hills, MI 48326
(248) 268-6600

From: MARTINS HENRIQUE
Sent: Friday, November 9, 2018 4:06 PM
To: Swain, David <swain.david@epa.gov>
Cc: Green, Donzell <green.donzell@epa.gov>; HORTON JOHN <HORTON.JOHN@mahindra.com>; FAHY JAMES <FAHY.JAMES@mahindra.com>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Dear David,
Thank you for the quick response.
I will contact Ex. 4 CBI and inquire about their availability and then inform you whether we will need extension on the required delivery date.

Thanks and kind regards,

Henrique R. Martins

Sr Manager
Technical and Regulatory Affairs
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275 Rex Blvd
Auburn Hills, MI 48326
(248) 268-6600

From: Swain, David <swain.david@epa.gov>
Sent: Friday, November 9, 2018 4:01 PM
To: MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Cc: Green, Donzell <green.donzell@epa.gov>; HORTON JOHN <HORTON.JOHN@mahindra.com>; FAHY JAMES <FAHY.JAMES@mahindra.com>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Hi Henrique,
I am interested in comparing your results with ours, because we do not normally test vehicles that do not have traps. But if Ex. 4 CBI does not have available testing within the next week, I understand. Upon request, we can extend any required delivery date if the reason is that you need to wait for a testing slot to become available.

-Dave

From: MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Sent: Friday, November 09, 2018 3:54 PM
To: Swain, David <swain.david@epa.gov>
Cc: Green, Donzell <green.donzell@epa.gov>; HORTON JOHN <HORTON.JOHN@mahindra.com>; FAHY JAMES <FAHY.JAMES@mahindra.com>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Dear David,
We have only requested Ex. 4 CBI to carry-out service accumulation as instructed in the Test Order 18-ATVB-PE-68.
Please inform us if EPA wants any additional preparations that were not listed in the Test Order 18-ATVB-PE-68 to be performed prior to delivery.
Also, please let us know a date that is more convenient for EPA for the shipment.

Meanwhile I will communicate our logistics team to cancel the shipment on Nov 12, 2018 and wait for your direction.

Thanks and kind regards,

Henrique R. Martins

Sr Manager
Technical and Regulatory Affairs
Certification, Homologation, and Compliance
Mahindra Automotive North American Technical Center
275 Rex Blvd
Auburn Hills, MI 48326
(248) 268-6600

From: Swain, David <swain.david@epa.gov>
Sent: Friday, November 9, 2018 2:25 PM
To: MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Cc: Green, Donzell <green.donzell@epa.gov>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Please do not ship it yet.
Have you tested it?

From: MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Sent: Friday, November 09, 2018 11:37 AM
To: Swain, David <swain.david@epa.gov>
Cc: Green, Donzell <green.donzell@epa.gov>; Hoban, John <Hoban.John@epa.gov>; HORTON JOHN <HORTON.JOHN@mahindra.com>; FAHY JAMES <FAHY.JAMES@mahindra.com>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Dear David,
This email is to inform you that the Service Accumulation is now complete.
I went to Ex. 4 CBI esterday to review and sign the forms listed in attachments 1,2 and 3 of the Test Order letter sent by EPA.
A binder containing all the forms (as all as other required documents like Operator's Guide) in inside the storage compartment located under the driver seat.
The storage compartment is locked (keys are on the same key holder as the ignition keys) and the binder is wrapped in a plastic bag.

We are taking care of the arrangements to ship the vehicle to the EPA test laboratory. Shipment is planned for Nov 12, 2018.
Our shipping request has the contact information supplied in the Test Order letter sent by EPA.
Please let me know if this date is convenient to EPA or if you would suggest another date.
Also, please let us know should you have additional instructions for the delivery.

I will fill attachment 4 with the list of representatives to witness the test vehicle set-up as soon as EPA confirms the test date.

Thanks and kind regards,

Henrique R. Martins

Sr Manager
Technical and Regulatory Affairs
Certification, Homologation, and Compliance
Mahindra Automotive North American Technical Center
275 Rex Blvd
Auburn Hills, MI 48326
(248) 268-6600

From: MARTINS HENRIQUE
Sent: Friday, November 2, 2018 3:22 PM
To: 'Swain, David' <swain.david@epa.gov>
Cc: 'Green, Donzell' <green.donzell@epa.gov>; 'Hoban, John' <Hoban.John@epa.gov>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Dear David,

So far, based on the information we have from Ex. 4 CBI we do not believe we will need extension on the test order.

When the vehicle is ready to ship from Ex. 4 CBI we will notify you (and cc Donzell Green and John Hoban as per your request).

Thanks and kind regards,

Henrique R. Martins

Sr Manager
Technical and Regulatory Affairs
Certification, Homologation, and Compliance
Mahindra Automotive North American Technical Center
275 Rex Blvd
Auburn Hills, MI 48326
(248) 268-6600

From: Swain, David <swain.david@epa.gov>
Sent: Friday, November 2, 2018 11:03 AM
To: MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Cc: Ex. 4 CBI HORTON JOHN <HORTON.JOHN@mahindra.com>; FAHY JAMES <FAHY.JAMES@mahindra.com>; Green, Donzell <green.donzell@epa.gov>; Hoban, John <Hoban.John@epa.gov>; Chen, Emily <Chen.Emily@epa.gov>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Mr. Martins,
If Mahindra would like EPA to extend the test order delivery date to NVFEL, we can do this informally via email. Please email me the request, and please make sure to keep Donzell Green and John Hoban in the cc.

Please do not contact John Hoban. Please only keep him in the cc of all correspondence until further notice.

Thank-you,
-David Swain

From: MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Sent: Friday, November 02, 2018 10:34 AM
To: Swain, David <swain.david@epa.gov>; Green, Donzell <green.donzell@epa.gov>; Jackson, Cleophas <jackson.cleophas@epa.gov>
Cc: Ex. 4 CBI HORTON JOHN <HORTON.JOHN@mahindra.com>; FAHY JAMES <FAHY.JAMES@mahindra.com>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Dear David,
Based on an email we recently received from Ex. 4 CBI s planning on maintenance of their Emissions benches until November 12, 2018 Ex. 4 CBI could you please confirm?).
Please let us know your decision regarding the test location and we will make sure to supply the vehicle at the date and place required by EPA.

Thanks and kind regards,

Henrique R. Martins

Sr Manager
Technical and Regulatory Affairs
Certification, Homologation, and Compliance
Mahindra Automotive North American Technical Center
275 Rex Blvd
Auburn Hills, MI 48326
(248) 268-6600

From: Swain, David <swain.david@epa.gov>
Sent: Thursday, November 1, 2018 12:25 PM
To: MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Cc: Ex. 4 CBI Green, Donzell <green.donzell@epa.gov>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Mr. Martins,
Please reply-all. Will Ex. 4 CBI be able to perform an emissions test?
Thank-you,
-David Swain

From: MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Sent: Wednesday, October 31, 2018 10:52 AM
To: Jackson, Cleophas <jackson.cleophas@epa.gov>; Swain, David <swain.david@epa.gov>; Green, Donzell <green.donzell@epa.gov>
Cc: HORTON JOHN <HORTON.JOHN@mahindra.com>; FAHY JAMES <FAHY.JAMES@mahindra.com>
Subject: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Dear All,

This note is to inform you that the ROXOR vehicle selected by EPA for Compliance testing was shipped to Ex. 4 CBI yesterday. According to Ex. 4 CBI personnel, service accumulation will be initiated today and should be completed by sometime tomorrow.

The contacts of the Ex. 4 CBI personnel managing the service accumulation are:

Ex. 4 CBI

Please let me know the date the test will be scheduled and confirm the test location, so I can fill out the "Statement of Manufacturer Intent to Witness Test Vehicle Set-up" form.
Also, I wanted to let you know the communication I received regarding this test order (Test Order 18-ATVB-PE-68) only contains attachment 1, 3 and 4.

Please let me know in case you also require attachment 2 to be filled and submitted.
Finally, please send me the document you referred during our meeting as "Blue Sheet" so I can fill it out and submit to you.

Thanks and kind regards,

Henrique R. Martins

Sr Manager
Technical and Regulatory Affairs
Certification, Homologation, and Compliance
Mahindra Automotive North American Technical Center
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(248) 268-6600

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Message

From: Swain, David [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=19721755371B4F7382EC6A0AEBC0BC9A-SWAIN, DAVID]
Sent: 12/21/2018 12:21:52 AM
To: MARTINS HENRIQUE [MARTINS.HENRIQUE@mahindra.com]
Subject: RE: Mahindra ROXOR - KMNCX2.52DM1/ DF testing after changes
Attachments: Carry Across AC-17F cd9411 15% rule, 600 degF TEMP .pdf

Mr. Martins,

Ex. 4 CBI

-Dave Swain

From: MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Sent: Thursday, December 20, 2018 2:14 PM
To: Swain, David <swain.david@epa.gov>
Cc: HORTON JOHN <HORTON.JOHN@mahindra.com>
Subject: Mahindra ROXOR - KMNCX2.52DM1/ DF testing after changes

Dear David.

Ex. 4 CBI

Thanks and kind regards,

Henrique R. Martins

Sr Manager
Technical and Regulatory Affairs
Certification, Homologation, and Compliance
Mahindra Automotive North American Technical Center

275 Rex Blvd
Auburn Hills, MI 48326
(248) 268-6600

From: MARTINS HENRIQUE
Sent: Wednesday, December 12, 2018 2:08 PM
To: 'Swain, David' <swain.david@epa.gov>
Cc: HORTON JOHN <HORTON.JOHN@mahindra.com>
Subject: RE: DF testing after changes

Dear David,

Thank you for sharing EPA Advisory Circular (A/C 17F) with me.

Ex. 4 CBI

Our question is specific about the DF.

Ex. 4 CBI

We believe this is a valid approach, but we would like to request EPA's feedback on the matter before we proceed further.
Please let me know if EPA agrees Ex. 4 CBI
Ex. 4 CBI

Should you want to have a quick audio-conference to further discuss this matter, please let me know and we will be glad to arrange it.

Thanks and kind regards,

Henrique R. Martins

Sr Manager
Technical and Regulatory Affairs
Certification, Homologation, and Compliance
Mahindra Automotive North American Technical Center
275 Rex Blvd
Auburn Hills, MI 48326
(248) 268-6600

From: Swain, David <swain.david@epa.gov>
Sent: Thursday, December 6, 2018 1:58 PM
To: MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Cc: HORTON JOHN <HORTON.JOHN@mahindra.com>
Subject: DF testing after changes

Hi Henrique,

Ex. 4 CBI

-Dave

(734)214-4377

| U.S. Environmental Protection Agency |
| Compliance Division |
| Project engineer |
| 2000 Traverwood Drive |
| Ann Arbor, MI 48105 |

Please consider the environment before printing this email.

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
ANN ARBOR, MICHIGAN 48105

OFFICE OF
AIR AND RADIATION

May 31, 1994 CD-94-11 (LDV/LDT)

Dear Manufacturer:

SUBJECT: Solicitation of Comments on Advisory Circular 17F: General Criteria for the Carryover and Carry Across of Certification Data and the Carryover of Fuel Economy Data for Light-Duty Vehicles and Light-Duty Trucks

Enclosed with this letter is a copy of Advisory Circular (A/C) 17F for your review and comment. This A/C has remained essentially unchanged since its release on November 16, 1982. In the intervening years, advances in automotive engineering and changes to emission standards and test procedures have significantly altered emission control technology.

Recognizing the possibility that A/C 17F may need corresponding changes, the Certification Division will review the A/C to make appropriate changes. We seek your input and expertise to assist us in focusing our efforts. In addition to any general comments you may have, we seek input on these specific topics:

1. A/C 17F describes characteristics of emission-related systems or components (such as engine displacement, test weight basis, catalyst loading, and so forth) that are allowed to differ between the engine family from which carryover is requested and the "new" engine family. The A/C also lists associated criteria for approval for each of these items.

A. What other components or systems should be added?

B. What criteria for approval should be associated with each emission-related component or system, i.e., what sort of data would indicate whether there is equivalency or superiority? (Consider new criteria, if any, for components or systems already given in the A/C, as well as criteria for any new items.)

C. How should catalysts and oxygen sensors be evaluated to determine equivalency or superiority with regard to thermal degradation?

2. Do you have suggestions concerning other items important to carryover issues regarding data vehicles, exhaust and evaporative emission data, and fuel economy data that are not addressed in the preceding questions?

Although we welcome all suggestions for change, we are limiting our consideration for now to changes that do not require modifications to regulations.

We would greatly appreciate it if you would complete your review of A/C 17F and submit your comments quickly. The earlier in our review process that we can consider your input, the more effectively it can be incorporated. Please send your comments to Ms. Mary Walsh of the Certification Division by July 5, 1994.

Sincerely,

Robert E. Maxwell, Director
Certification Division

Enclosure

cc: CARB
EPSD
MOD
OGC
RDSD

G:\CPB\DEARMFR.17f

EPA-HQ-2019-001564
EPA-HQ-2019-002000

United States
Environmental Protection
Agency

Office of
Air, Noise and Radiation
Washington, DC 20460

EPA

OMS
Advisory Circular

SUBJECT: General Criteria for the Carryover and Carry-Across of Certification Data and the Carryover of Fuel Economy Data for Light-Duty Vehicles and Light-Duty Trucks

I. Purpose

The purpose of this advisory circular (A/C) is to set forth EPA's policy regarding the use of certification data in more than one category or subcategory of vehicles of the same model year (known as "carry-across") and the use of data from previous model years' certification vehicles (known as "carryover"). A/C No. 17E is superseded beginning with the 1983 model year.

II. Background

A. General Background

40 CFR 86.082-24(f) provides that the Administrator may accept data from a vehicle for which certification has previously been obtained or for which all applicable data required under Section 86.082-23 have previously been submitted and which is similar to another emission-data or durability-data vehicle selection. This provision is the basis for carryover and carry-across and permits manufacturers to obtain certification without unnecessarily incurring the costs and delays of building and testing certification vehicles.

B. Recent Revisions

1. Although some interaction between evaporative and exhaust emission levels is likely, the amount of interaction is not expected to be large enough to significantly affect the deterioration of exhaust emission control systems. Therefore, the evaporative emission family and control system restrictions of A/C No. 17E, paragraphs VI.A.3.b and c, have been deleted.

2. EPA initiated the voluntary Abbreviated Certification Review Program in a letter to manufacturers dated December 15, 1978. In Attachment A of the letter, EPA said that manufacturers may decide in lieu of the Administrator the appropriateness of using emission data from previously certified vehicles to represent test results of similar emission-data and durability-data vehicles in lieu of testing said vehicles. The abbreviated certification review program procedure was formally adopted in 40 CFR 86.080-12 on April 17, 1980. Manufacturers have been routinely making their own carryover decisions, subject to EPA audit, since that time.

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3. In order to facilitate the efficient carryover of durability data based on equivalence or superiority, a list of vehicle differences and specific data requirements has been added to Section IX. This will allow manufacturers to approve durability carryover based on equivalence or superiority in certain limited situations.

4. EPA policy concerning test weight intervals was established in a memorandum to Certification Branch members dated April 24, 1979. The memorandum stated that emission-data carryover would not be jeopardized if a vehicle had been tested at a higher test weight in a previous year and the request for carryover was to represent a vehicle at a lower test weight. The inertia weight class restriction of A/C No. 17E paragraph VI.A.4.d has been deleted to reflect this policy.

5. On September 25, 1980, EPA published regulations in 40 CFR 86.084-28(b)(4) that allow manufacturers to design their own testing procedures for determining emissions deterioration factors for light-duty trucks starting with the 1984 model year. Under these regulations, the manufacturer is responsible for determining the applicability of carryover of deterioration factors for light-duty trucks. As in the past, carryover guidelines established for light-duty vehicles may be used by the manufacturer for light-duty trucks where applicable.

6. EPA sent a letter to manufacturers dated July 1, 1981 which contained Certification Program Policy Changes including several changes to A/C No. 17E. Paragraph VI.A.3.d was changed to allow equivalent test weight to increase by 500 pounds for durability-data carryover. Paragraph VI.A.3.f was deleted to remove the road-load horsepower constraint for durability-data carryover. Paragraph VI.A.5.b was changed to allow emission-data carryover of back-to-back running change testing. This A/C has been revised to reflect these policy changes.

8. On October 13, 1981 EPA published regulations in 40 CFR 86.082-26(a)(3)(i)(A) and (ii)(A) that allowed emission-data vehicles to accumulate more than 4,250 miles but required the fuel economy data to be factored after 6,200 miles. Paragraph V.A.6 of this advisory circular was added to ensure that any data generated by a fuel economy data vehicle which was carried over to fulfill emission-data requirements would also be factored.

III. Applicability

This advisory circular is effective immediately and is applicable to 1983 and later model year light-duty vehicles and light-duty trucks.

NOTE: To avoid repetition of phrases such as "prior model year," "current model year," and "year for which certification is sought," general applicability references are made to model years 1982 and 1983. These references do not limit the applicability of this A/C. In applying this circular to other model years, 1983 shall be considered to have the same meaning as "year for which certification is sought," and 1982 to mean "year in which carryover data were generated," or "prior model year."

IV. Relationship Between Emission Data Carryover and Fuel Economy Data Carryover

A. Although the carryover of certification data is treated separately from the carryover of fuel economy data in this A/C, the approval of fuel economy data carryover depends on the acceptability of emission data carryover. Conversely, in some cases, emission data carryover may not be approved in light of information obtained while generating new fuel economy data. For these reasons, neither emission data carryover or fuel economy data carryover will be approved nor denied until the acceptability of both of these sets of data is determined.

B. In general, three conditions can exist relating to emission data carryover and fuel economy data carryover, as follows:

1. If both emission data and fuel economy data carryover criteria are met, emission data and fuel economy data carryover will be approved.

2. If emission data carryover is found to be unacceptable, neither emission data nor fuel economy data carryover will be approved.

3. If the emission data carryover criteria are met, but the fuel economy data are found to be unacceptable for carryover, fuel economy data carryover will not be approved and new fuel economy data will be required. Emission data carryover will not be approved at this time. If the new fuel economy data are acceptable and and the fuel economy data vehicle meets the 1983 emission standards, emission data carryover will be approved.

C. A flow chart depicting a general carryover evaluation procedure is attached to this A/C.

V. General Criteria for Carryover of Exhaust Emission Data

A. An initial determination as to the acceptability of the proposed carryover data will be based in part on such considerations as the similarity of test results between the manufacturer's and EPA's facilities, special problems, or marginal emission performance encountered during 1982 certification. The ultimate determination will be made as follows:

1. The 1983 certification test vehicle selection will be designated just as if carryover had not been requested.

2. The test vehicle selection for 1983 will be compared with the vehicle which generated the proposed carryover data.

3. Carryover durability data will be accepted if the 1982 durability-data vehicle:

a. Qualified to be grouped in the same engine family[1] as the durability-data vehicle designated for 1983--vehicles not qualified to be grouped in the same family may be evaluated under the provisions of Section IX,

b. Was equipped with the same exhaust and crankcase emission control systems as the durability-data vehicle designated for 1983--vehicles not equipped with the same control systems may be evaluated under the provisions of Section IX,

c. Was tested at the same, heavier, or no more than 500 pounds lighter equivalent test weight as the durability-data vehicle designated for 1983,

d. Was generally representative of the durability-data vehicle which was designated for 1983 model year certification in terms of other parameters judged to be significant by EPA (e.g., engine displacement, auxiliary emission control devices, etc.),

e. Had interpolated test results which could comply with the provisions of 40 CFR 86.082-28, and

f. Had all emission-related scheduled maintenance items performed at the same or less frequent mileage interval as is scheduled for the 1983 vehicles for which carryover is sought. Maintenance items which were scheduled to be performed on the 1982 vehicle on an "inspect and perform if necessary" basis, but were not performed as a result of the inspection, may generally be eliminated from the 1983 maintenance schedule (if justification is provided) without jeopardizing durability carryover. Less frequent 1983 model year maintenance also may be approved if the manufacturer demonstrates that such maintenance results in equivalent or superior emission control performance (see Section IX).

4. Carryover emission data normally will be accepted if the 1982 emission-data vehicle:

a. Qualified to be grouped in the same engine family[1] as the emission-data vehicle designated for 1983,

b. Qualified to be grouped in the same evaporative emission family[2] as the emission-data vehicle designated for 1983--vehicles not qualified to be in the same evaporative emission family may be evaluated under the provisions of Section IX,

c. Was equipped with the same exhaust, evaporative[3], and crankcase emission control systems as the emission-data vehicle designated for 1983,

d. Was tested at the same or heavier equivalent test weight and had the same transmission configuration (i.e., manual, automatic, semi-automatic, number of forward gears, overdrive [if used during FTP], torque converter multiplication ratio, stall speed, and shift calibration) and N/V ratio (within three percent in any of the forward gears),

e. Used a shift procedure which, for any upshifting sequence (e.g., shifting from second to third), differs by no more than 3 mph from the shift procedure recommended by the manufacturer (in accordance with 40 CFR 86.128-79) for the emission-data vehicle designated for 1983 (see paragraph 4.d, above),

f. Differed from the emission-data vehicle selected for 1983 only in ways (e.g., calibration differences) in which, in EPA's technical judgment, would cause the 1983 vehicle to have equivalent or superior emission characteristics,

g. Had a road-load horsepower value of at least 90 percent of that road-load horsepower setting designated for the 1983 model year, and

h. Had emission test results which would comply with the 1983 standards after the applicable deterioration factor has been applied.

5. Carryover of data from running change vehicles will be accepted if the running change vehicle meets the criteria of paragraph 4 above.

6. Carryover of data from fuel economy data vehicles to satisfy certification emission-data requirements will be accepted if:

a. The vehicle meets the criteria of paragraph 4 above, and

b. The fuel economy data has been factored according to 40 CFR 86.082-26(a)(3)(i)(A) and (ii)(A). (If the data has been previously submitted unfactored, it should be factored and resubmitted as a new test.)

B. If, based on the above criteria (including the initial determination regarding the acceptability of the proposed carryover data), exhaust emission carryover data would satisfy 1983 model year testing requirements, EPA may allow its use. In the event carryover of exhaust emission durability data is granted, the exhaust emission deterioration factor will be used to determine if emission-data vehicles, proposed running changes, or model additions meet the exhaust emission standards.

VI. Criteria for Carryover of Evaporative Emission Data

For evaporative durability data, the manufacturer is responsible for determining the applicability of carryover of the evaporative deterioration factor. For evaporative emission data, an initial determination as to the acceptability of the proposed carryover data will be based in part on considerations including the similarity of test results between the manufacturer's and EPA's facilities or special problems encountered during the 1982 certification program. The ultimate determination will be made as follows:

A. The 1983 certification test vehicle(s) will be designated just as if carryover had not been requested.

B. The evaporative emission control system of the test vehicle(s) selected for 1983 will be compared with the respective 1982 system.

C. Carryover evaporative emission data will be accepted if the 1982 emission-data vehicle was tested for evaporative emissions, and:

1. Qualified to be grouped in the same evaporative emission family as the emission-data vehicle designated for 1983,

2. Was equipped with the same exhaust, evaporative[3], and crankcase emission control systems as the emission-data vehicle designated for 1983,

3. Differed from the emission-data vehicle selected for 1983 only in ways (e.g., calibration differences) which, in EPA's technical judgment, would cause the 1983 vehicle to have equivalent or superior emission characteristics, and

4. Had emission test results which would comply with the 1983 standards after the deterioration factors have been applied.

VII. Criteria for Use of Certification Carry-Across Data

A. The criteria for determining if two (or more) vehicles are sufficiently similar to permit the carry-across (applying data to vehicles from more than one family or system within the same model year) of certification data, for either exhaust or evaporative emissions, are that the data shall meet the appropriate criteria used to judge the acceptability of data for carryover purposes.

B. Two situations exist for which the use of carry-across data is feasible:

EPA-HQ-2019-001564
EPA-HQ-2019-002000

1. Light-duty vehicles and trucks: Although the standards for gasoline-fueled and diesel light-duty vehicles differ from the standards of the corresponding types of light-duty trucks, some manufacturers have elected to employ the same emission control techniques on passenger cars and light-duty trucks. Because the emission test procedures for gasoline-fueled light-duty vehicles are the same as those for light-duty trucks (except for the horsepower calculations), as are the emission test procedures for diesel light-duty vehicles and light-duty trucks, the data generated from a gasoline-fueled LDV (or LDT) may be used to satisfy data requirements for a LDT (or LDV), provided the appropriate carryover criteria provided in this A/C are met.

2. Evaporative emission testing within an evaporative emission family: The evaporative emission regulations for LDV's and LDT's (41 FR 35626) established the evaporative emission family concept. This concept is intended to require evaporative emission testing of only those test vehicles which represent unique evaporative emission control systems. Carry-across of data will be approved if, under the provision of A/C No. 59, the individual evaporative emission families were eligible to be grouped together as a single evaporative emission family and if the minimum data requirements of the combined family are represented, in whole or in part, by the data for which carry-across is requested. Since LDV and LDT evaporative emission families must be separate, if two emission families differ only in that one is for LDV's and one is for LDT's, carry-across of data will be acceptable. Additional data requirements of the combined family, of course, would also have to be met before certification can be granted.

VIII. Requesting the Use of Carryover and Carry-Across Certification Data

If a manufacturer intends to use carryover or carry-across data to satisfy the 1983 model year certification requirements, EPA should be notified in the cover letter accompanying the 1983 application for certification. Then, the manufacturer must provide the test data which the manufacturer proposes to use and a complete list of differences between the vehicle(s) specified for 1983 and the vehicle(s) which generated the data for which carryover is being requested. In addition, the manufacturer should include a complete description of the vehicles (whether durability-data, emission-data, fuel economy, or running change vehicles) which generated the data as a supplement to the application (relevant pages from the 1982 application are usually acceptable for this purpose) or should refer to the appropriate pages in the 1982 application.

IX. Other Demonstration of Certification Carryover or Carry-Across Applicability

If a 1982 vehicle does not qualify for carryover or carry-across under Sections V, VI, VII, and VIII outlined above, but the vehicle difference(s) would indicate that the 1983 model year vehicle will have equivalent or superior performance, data from the 1982 model year vehicle may still be acceptable upon demonstration by the manufacturer of the equivalence or superiority of the proposed configuration through use of emission data or other information to be evaluated on an individual basis.

The following list of examples is provided to facilitate the efficient use of this option regarding the carryover or carry-across of durability data. The list contains examples of vehicle differences which have either been previously approved by EPA or which, in EPA's opinion, are likely to result in equivalent or superior emissions durability. The list is not intended to limit the use of this option. EPA will continue to evaluate requests for vehicle differences not listed below on an individual basis. In order for the manufacturer to approve durability carryover under the Abbreviated Certification Review Program protocols for one or more of the changes listed below, all of the other engine family or emission control system parameters listed in 40 CFR 86.082-24(a)(2) or Advisory Circular No. 20-B must be the same. The manufacturer is allowed to approve durability carryover if one or a combination of the vehicle differences listed below exist.

Regarding manufacturer approval of carryover based on equivalence or superiority for items listed below, the basic philosophy is that if a particular system has been certified its physical durability and emissions stability have been sufficiently demonstrated for purposes of preproduction certification. If, in addition, catalyst thermal degradation is not significantly increased, EPA believes durability carryover can be approved without significant risk to emissions performance. Catalyst temperature, while not the sole indicator of emissions performance, is in EPA's opinion a significant indicator. Since catalyst temperatures provide objective criteria for assuring that thermal degradation of the catalyst does not increase, the manufacturers can be allowed to approve carryover. For new or unproven systems, however, EPA has no assurance that carryover can be approved without significant risk to emissions performance. Therefore, manufacturers must continue to submit to EPA requests for carryover of data to new systems or to systems that EPA has not determined are likely to result in equivalent or superior performance as outlined below.

In certain instances, EPA expects that manufacturers will want to carryover data to a vehicle using systems or components that are not identical to ones that have been used in a family that has been previously certified. In those cases where a particular system or component differs by more than calibrations from one that has been used previously, it is the manufacturers' responsibility to assure that whatever minor differences exist will not adversely affect emissions deterioration. If the manufacturer does not have an adequate basis and associated documentation for such a determination, carryover should not be approved. EPA intends to exercise its option to audit and review data or other information utilized in making such determinations. This audit process will be facilitated if the manufacturer prepares a list of all differences (other than calibrations) between the system or component intended for production and the one that was previously used in a certified family and addresses the durability impact of each difference. In addition, EPA may confirm the validity of the manufacturers' determinations through its in-use vehicle testing programs which could result in recall and denial of future carryover of particular data.

A. Engine Displacement

Carryover of durability data from a larger displacement engine to one that is more than 50 cubic inches or 15 percent smaller may be approved by the manufacturer if:

1. the engines are otherwise qualified to be in the same engine family in terms of the engine parameters specified in 40 CFR 86.082-24(a)(2), and

2. catalyst thermal degradation does not increase significantly[4] due to this change.

If the block configuration, valve locations, or cylinder bore center-to-center dimensions are not the same, the manufacturer must submit a request for carryover with specific information, catalyst temperature data, and any evidence of engine out emissions stability (may include bench test data, etc.) to EPA for evaluation.

B. Fuel System

Case 1. The number of carburetors, number of venturis, or principle of carburetor operation (e.g., simple venturi, air valve, constant depression) may be deemed equivalent for durability purposes and the manufacturer may approve durability carryover if:

1. the carburetor model intended for production has been used in a family that has been previously certified[5] by that manufactuer and

2. catalyst thermal degradation does not increase significantly[4] due to this change.

Case 2. Carryover of durability data from a vehicle using one or more carburetors to a vehicle using any electronic timed or pulsed fuel injection system may be approved by the manufacturer if:

1. the fuel injection system design intended for production has been used in a family that has been previously certified[5] by that manufacturer and

2. catalyst thermal degradation does not increase significantly due to this change.[4]

Case 3. Carryover of durability data from a vehicle using throttle body fuel injection to a vehicle using electronic timed or pulsed multipoint intake manifold fuel injection may be approved by the manufacturer if:

1. the fuel injection system design intended for production has been used in a family that has been previously certified[5] by that manufacturer and

2. catalyst thermal degradation does not increase significantly due to this change.[4]

For any other fuel system changes that could not normally be grouped in the same engine family, the manufacturer must submit a request for carryover with specific information, catalyst temperature data, and any evidence of physical durability or engine out emissions stability (may include bench test data, etc.) to EPA for evaluation.

C. Catalyst

Case 1. The manufacturer may approve the carryover of durability data for any of the following differences:

1. change in general catalyst location away from engine (downstream movement, e.g., from engine compartment to underfloor area).

2. increase in catalyst volume (in excess of 15 percent of largest volume) at the same or higher noble metal loading (g/ft^3 and proportion of active constituents).

3. increase in active material loading of any or all noble metals (proportion of active constituents may only be changed by increasing the load of particular noble metals--decreases in active material loadings must be evaluated under the "essentially equivalent" provisions of A/C No. 20B).

Case 2. Carryover of durability data to a vehicle using different basic catalyst packaging (e.g., materials, technique of containment and restraint, and general method of construction) or substrate construction technique (e.g., extruded, laid-up, formed) may be approved by the manfacturer if:

1. the basic catalyst packaging or substrate construction technique intended for production has been used in a family that has been previously certified[5] by that manufacturer and

2. catalyst thermal degradation does not increase significantly due to this change.[4]

For any other catalyst changes that could not be grouped in the same engine family and emission control system under A/C 20B, the manufacturer must submit a request for carryover with the specific information, catalyst temperature data, and evidence of physical durability and emissions stability to EPA for evaluation.

D. Air Injection

Case 1. Carryover of durability data to a vehicle which differs in general location of injected air, general method of driving air pump, or modulation of secondary air flow rate may be approved by the manufacturer if:

1. the basic air injection system intended for production, including general location of injected air, general method of driving air pump, or modulation of secondary air flow rate, as applicable, has been used in a family that has been previously certified[5] by that manufacturer and

2. catalyst thermal degradation does not increase significantly due to this change.[4]

Case 2. Pump air injection and pulse air injection may be deemed equivalent for durability purposes and durability carryover may be approved by the manufacturer if:

1. the basic air injection system intended for production, including general location of injected air, general method of driving air pump, or modulation of secondary air flow rate, as applicable, has been used in a family that has been previously certified[5] by that manufacturer and

2. catalyst thermal degradation does not increase significantly due to this change.[4]

Case 3. Carryover of durability data from a vehicle with no air injection to a vehicle with either pump air injection or pulse air injection may be approved by the manufacturer if:

1. the basic air injection system intended for production, including general location of injected air, general method of driving air pump, or modulation of secondary air flow rate, as applicable, has been used in a family that has been previously certified[5] by that manufacturer and

2. catalyst thermal degradation does not increase significantly due to this change.[4]

For any other air injection changes that could not be grouped in the same control system under A/C No. 20B, the manufacturer must submit a request for carryover with specific information, catalyst temperature data, and any evidence of physical durability or emissions stability (may include bench test data, etc.) to EPA for evaluation.

E. Exhaust Gas Recirculation

Carryover of durability data to a vehicle which differs in general location of exhaust gas pickup, general point of exhaust gas introduction, or general method of modulating quantity of EGR may be approved by the manufacturer if:

1. catalyst thermal degradation does not increase significantly due to this change[4] and

2. the basic EGR system intended for production, including general pickup location, general introduction point, and general modulation method, has been used in a family that has been previously certified[5] by that manufacturer. (EPA has noted that other items such as EGR valve location and pintle design, EGR flow passageway design, cooling method design, transducer designs, diaphram materials, etc., can also affect EGR system deterioration. The manufacturer should document that any changes to these items do not cause increased EGR system deterioration.)

For any other EGR changes that could not be grouped in the same control system under A/C No. 20B, the manufacturer must submit a request with specific information, catalyst temperature data, and evidence of physical durability and emissions stability (may include bench test data) to EPA for evaluation.

F. Electronic Control Systems

While Electronic Control Systems are not listed among the engine family or emission control system determinants in A/C No. 20B, EPA has noted that certain aspects of these systems can affect emissions durability and offers the following as a guideline for assuring that the 1982 durability-data vehicle was generally representative of the 1983 durability-data vehicle. Different electronic control systems may be deemed equivalent for durability purposes and the manufacturer may approve durability carryover under the following conditions:

1. The sensor and controller designs intended for production have been used in a family that has been previously certified[5] by that manufacturer.

2. The use of a malfunction warning system may not be deleted.

3. The following parameters may not be deleted:
   a. Electronic Spark Control
   b. Sensing of EGR Valve Position or Flowrate

4. The following parameters may not be added or deleted:
   a. Sensing of Exhaust Gas Oxygen or Content
   b. Sensing of Mileage (or inferred mileage in the form of Time)
   c. EGR Control
   d. Feedback Fuel Control

Requests for carryover that do not meet the above conditions may be submitted to EPA for evaluation. The request should include specific information and evidence of physical durability and emissions stability (may include bench test data, etc.)

X. General Criteria for Carryover of Fuel Economy Data From Vehicles for Which Certification Carryover is Requested

A. When requesting approval to use emission data generated by vehicles selected in accordance with the provisions of 40 CFR Part 86 for carryover certification, the manufacturer should be cognizant of the fact that the EPA approved fuel economy values must also be considered as part of the request. These fuel economy data, or the fuel economy data generated in accordance with the criteria set forth in paragraph X.F, will be used in the fuel economy data base.

B. The general criteria which EPA will use to determine the appropriateness of any carryover request are outlined in Section IV. For fuel economy carryover purposes, any certification vehicle for which emission carryover is requested and which satisfies the criteria in Section V of this A/C also satisfies the provisions of 40 CFR 600.007-80(a) for vehicle acceptability.

C. A carryover request which does not satisfy the general criteria set forth in Section V of this A/C will not be considered for either emission-data carryover or fuel economy carryover and, therefore, a new emission-data vehicle will be required.

D. Once the vehicle acceptability has been determined, the 1982 data will be evaluated as to representativeness for 1983 by determining if (as a minimum):

1. The 1982 vehicle was tested at the same or higher equivalent test weight,

2. The 1982 vehicle was tested at the same or higher road load,

3. The 1982 vehicle was shifted in a manner consistent with the shift procedure guidelines set forth in A/C No. 72 or at speeds which would be expected to understate the fuel economy performance,

4. The 1982 vehicle differed from the 1983 emission-data vehicle selected only in ways which, in EPA's technical judgment, would cause the 1983 vehicle to have equivalent or superior fuel economy characteristics.

E. For those certification and fuel economy data judged by EPA to be representative, the fuel economy data generated by the certification vehicle will be used, that is, carryover of data (both fuel economy and certification) will be approved. In fact, data from a certification vehicle which satisfy the criteria for acceptability and representativeness must be used in the fuel economy program.

F. In those cases where the certification data satisfy the criteria of Section V, but the fuel economy are judged by EPA to be unrepresentative because they would be expected to overstate the 1983 fuel economy values, or there is a degree of uncertainty regarding the evaluation of representativeness in paragraph X.D above, the manufacturer will be required to test a 1983 fuel economy data vehicle (FEDV). If any of the emission levels from the FEDV exceed the emission standards with the appropriate deterioration factor applied, then the data from the FEDV are unacceptable and the request for carryover of 1982 emission data will be denied. If the data meets the standards and the requirements of 40 CFR 600.007-80 then, because the FEDV is a 1983 vehicle tested in accordance with the 1983 test procedures, the FEDV will satisfy the criteria of acceptability and representativeness. However, the data must still satisfy a fuel economy reasonableness check.

G. If the fuel economy data from the 1983 FEDV are judged to be reasonable, the data will be used. Also, if the data from the 1983 FEDV confirm the fuel economy data from the 1982 emission-data vehicle, both sets of fuel economy data will be used. In both cases, the emission results from the 1982 emission-data vehicle will be used. That is, the carryover request (both fuel economy and emission-data) will be approved.

H. If the fuel economy data generated by the 1983 FEDV at the manufacturer's facility are judged to be unreasonable, the vehicle will be subjected to EPA confirmatory testing. If the emission data, generated at EPA in accordance with the provisions of 40 CFR 86.081-29, do not meet the emission standards with the appropriate deterioration factor applied, carryover will be denied and a new emission-data vehicle will be required. If the emission data from the 1983 FEDV meets the emission standards, the 1983 emission-data carryover request will be granted. However, the fuel economy data must still satisfy the reasonableness criteria.

I. Once the fuel economy data generated at EPA satisfy the reasonableness check, the fuel economy data from the 1983 FEDV will be used to satisfy the 1983 fuel economy carryover request and emission data carryover will be granted, as described in paragraph X.G.

EPA-HQ-2019-001564
EPA-HQ-2019-002000

XI. General Criteria for Carryover of Fuel Economy Data from Vehicles Other Than Those for Which Certification Carryover is Requested

A. A request for carryover of fuel economy data from vehicles other than those for which certification carryover is requested must be submitted with an FEDV package indicating that the data are from a prior model year.

B. Vehicles other than those for which certification carryover is requested must satisfy the criteria set forth in Section V of this A/C to be considered for fuel economy carryover.

C. Since the vehicles which generated these data have previously satisfied the vehicle acceptability and data reasonableness criteria, the data need only satisfy the representativeness criteria (paragraph X.D of this A/C).

D. Data which satisfy all of the criteria will be included in the fuel economy data base in accordance with the provisions of 40 CFR 600.008-77(b).

E. Any vehicle which does not satisfy the certification carryover criteria and/or data which do not satisfy the representativeness criteria will cause the carryover request to be denied.

Richard D. Wilson
Director, Office of Mobile Sources

Attachment

ENDNOTES

1. "Qualified to be grouped in the same engine family" means that the current year vehicle and the vehicle which generated the proposed carryover data must be identical in all the aspects listed in A/C No. 20B, Sections D, E, F (four-stroke, two-stroke, or rotary engines respectively).

2. "Qualified to be grouped in the same evaporative emission family" means that the current year vehicle and the vehicle which generated the proposed carryover data must be identical in all the aspects listed in A/C No. 59, Section D.

3. The same basic evaporative emission control system as specified in A/C No. 59, Section E.

4. It is the manufacturer's responsibility to assure that an increase in catalyst temperature will not result in increased thermal degradation of the catalyst. If the manufacturer has any reason to suspect that thermal degradation of the catalyst will increase significantly, carryover may not be approved. EPA believes that thermal degradation of the catalyst is not likely to increase if catalyst temperatures do not increase. EPA intends to look more closely at those cases where catalyst temperatures increase significantly. Criteria are offered below as a guideline to determine if catalyst temperatures are significantly affected. These criteria allow small increases in time and temperature to account for measurement variability. A manufacturer may determine that other criteria are more appropriate for establishing the acceptability of carryover for its designs. The manufacturer should document the basis for its determination that thermal degradation of the catalyst will not increase significantly. If a manufacturer believes that the following guideline is not appropriate for a particular situation and can document that thermal degradation of the catalyst will not increase even though these criteria are not met, durability carryover may still be approved. However, when the following criteria are not met, the manufacturer should notify EPA in writing at the time the carryover decision is made. This will allow most timely EPA audit of the manufacturer's carryover decision. The amount of time spent in the following temperature intervals is not increased by more than three percent or 60 seconds, whichever is greater, during the mileage accumulation cycle (approximately 2 hour cycle) unless there is a corresponding decrease in time at a higher temperature interval. The temperature intervals are 601°C to 650°C, 651°C to 700°C, 701°C to 750°C, and 751°C to 800°C (other intervals within this range may be appropriate, the 60 second tolerance applies to a 50°C interval). If maximum temperatures are above 800°C, the maximum temperature is not increased by more than 2 percent and amount of time above 800°C is not increased by more than two percent or 30 seconds, whichever is greater. Whenever possible, the impact of a

EPA-HQ-2019-001564
EPA-HQ-2019-002000

change on catalyst temperatures should be evaluated on a single vehicle, preferably the original durability-data vehicle. If the original durability-data vehicle is not available, the highest selling configuration from either of the model years is preferred. If it is not practical to evaluate the change on a single vehicle, other vehicle differences which could affect catalyst temperatures should be minimized. Again, configurations representing highest sales from each model year should be used if practical. Thermocouples should be located to provide accurate measurement of maximum temperatures. Each manufacturer should obtain a description of such location from his catalyst supplier and retain this with the rest of the documentation. If this is not possible, thermocouples may be located within the catalyst container at the approximate mid-point of the exhaust stream and approximately one inch from the substrate.

5. Carryover may not be approved for any components or systems that were used in families certified without completing the 50,000-mile certification provout under the small volume provisions of 40 CFR 86.082-24(e). Manufacturers must continue to submit requests to EPA for carryover involving systems or components that have not completed the 50,000 mile certification proveout. Requests for carryover may also be submitted to EPA if the 50,000-mile certification proveout has been successfully completed but a certificate was never obtained.

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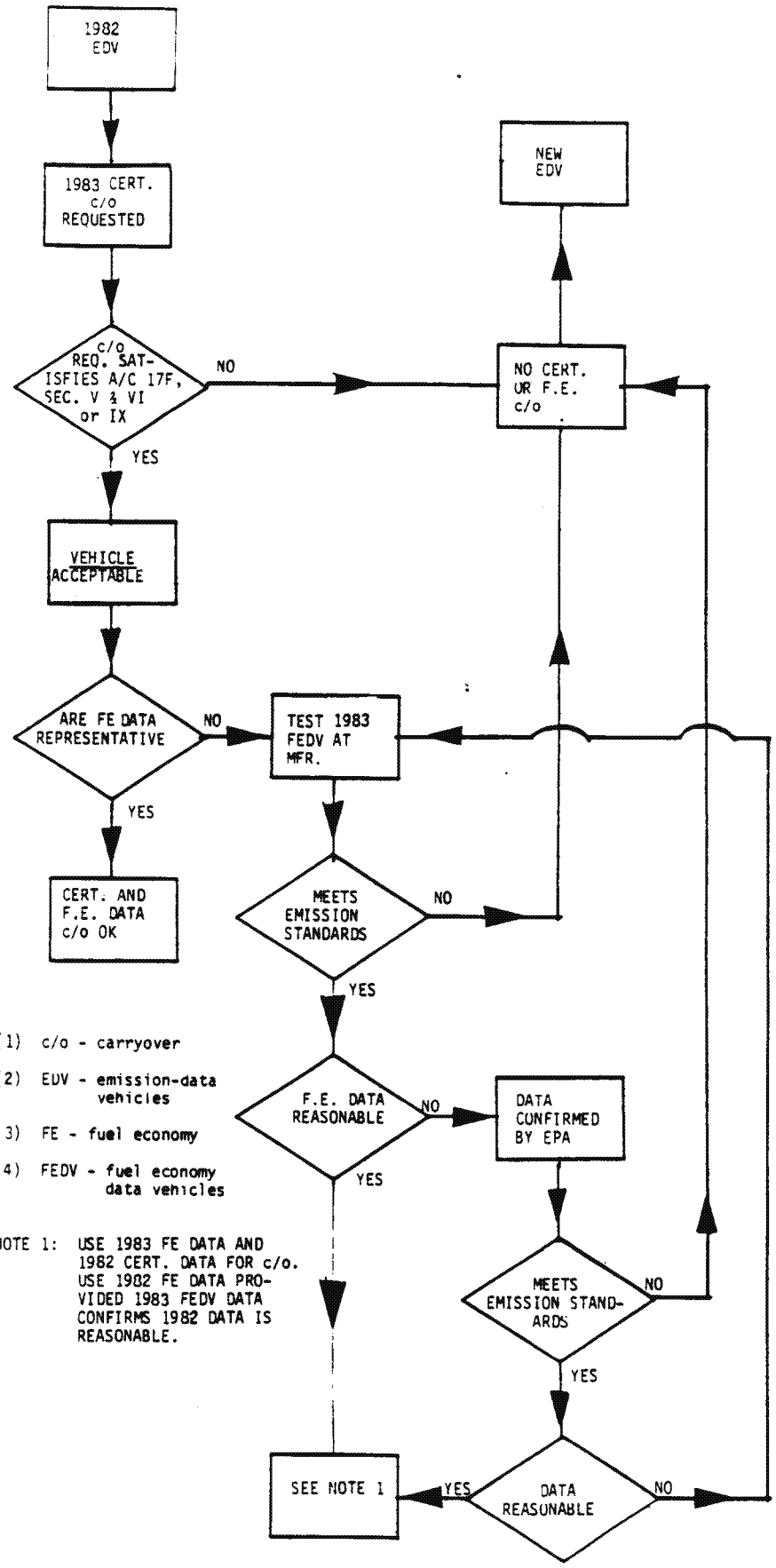
Attachment

CARRYOVER CRITERIA FLOW CHART FOR 40 CFR PART 86 VEHICLES



(1) c/o - carryover

(2) EDV - emission-data vehicles

(3) FE - fuel economy

(4) FEDV - fuel economy data vehicles

NOTE 1: USE 1983 FE DATA AND 1982 CERT. DATA FOR c/o. USE 1982 FE DATA PROVIDED 1983 FEDV DATA CONFIRMS 1982 DATA IS REASONABLE.

UPDATE

Attached are revised pages to replace the endnotes of Advisory Circular No. 17F. Please discard pages 16 and 17 of the endnotes issued November 16, 1982 and insert the revised pages dated January 21, 1988. Explanation of the revisions is provided in manufacturer guidance letter CD-88-02, dated January 21, 1988.

EPA-HQ-2019-001564
EPA-HQ-2019-002000

XI. General Criteria for Carryover of Fuel Economy Data from Vehicles Other Than Those for Which Certification Carryover is Requested

A. A request for carryover of fuel economy data from vehicles other than those for which certification carryover is requested must be submitted with an FEDV package indicating that the data are from a prior model year.

B. Vehicles other than those for which certification carryover is requested must satisfy the criteria set forth in Section V of this A/C to be considered for fuel economy carryover.

C. Since the vehicles which generated these data have previously satisfied the vehicle acceptability and data reasonableness criteria, the data need only satisfy the representativeness criteria (paragraph X.D of this A/C).

D. Data which satisfy all of the criteria will be included in the fuel economy data base in accordance with the provisions of 40 CFR 600.008-77(b).

E. Any vehicle which does not satisfy the certification carryover criteria and/or data which do not satisfy the representativeness criteria will cause the carryover request to be denied.

Richard D. Wilson
Director, Office of Mobile Sources

Attachment

ENDNOTES TO ADVISORY CIRCULAR NO. 17F

1. "Qualified to be grouped in the same engine family" means that the current year vehicle and the vehicle which generated the proposed carryover data must be identical in all the aspects listed in A/C No. 20B, Sections D, E, F (four-stroke, two-stroke, or rotary engines respectively).

2. "Qualified to be grouped in the same evaporative emission family" means that the current year vehicle and the vehicle which generated the proposed carryover data must be identical in all the aspects listed in A/C No. 59, Section D.

3. The same basic evaporative emission control system as specified in A/C No, 59, Section E.

4. It is the manufacturer's responsibility to assure that an increase in catalyst temperature will not result in increased thermal degradation of the catalyst. If the manufacturer has any reason to suspect that thermal degradation of the catalyst will increase significantly, carryover may not be approved. EPA believes that thermal degradation of the catalyst is not likely to increase if catalyst temperatures do not increase. EPA intends to look more closely at those cases where catalyst temperatures increase significantly. Criteria are offered below as a guideline to determine if catalyst temperatures are significantly affected. These criteria allow small increases in time and temperature to account for measurement variability. A manufacturer may determine that other criteria are more appropriate for establishing the acceptability of carryover for its designs. The manufacturer should document the basis for its determination that thermal degradation of the catalyst will not increase significantly. If a manufacturer believes that the following guideline is not appropriate for a particular situation and can document that thermal degradation of the catalyst will not increase even though these criteria are not met, durability carryover may still be approved. However, when the following criteria are not met, the manufacturer should notify EPA in writing at the time the carryover decision is made. This will allow most timely EPA audit of the manufacturer's carryover decision. The amount of time spent in the following temperature intervals is not increased by more than 3 percent or 60 seconds, whichever is greater, during the mileage accumulation cycle (approximately 2 hour cycle) unless there is a corresponding decrease in time at a higher temperature interval. The temperature intervals higher temperature interval. The temperature intervals are 601°C to 650°C, 651°C to 700°C, 701°C to 750°C, and 751°C to 800°C (other intervals within this

Revised: 1-21-88

range may be appropriate, the 60 second tolerance applies to a 50°C interval). If maximum temperatures are above 800°C, the maximum temperature is not increased by more than 2 percent and amount of time above 800°C is not increased by more than 2 percent or 30 seconds, whichever is greater. If the catalyst uses Al_2O_3 for support but does not contain Ni, only increases in time at temperatures above 700°C need to be considered. For oxidation catalysts which use Al_2O_3 for support but do not use Ni and do not use Rh, only increases in time at temperatures above 750°C need to be considered.

Whenever possible, the impact of a change on catalyst temperatures should be evaluated on a single vehicle, preferably the original durability-data vehicle. If the original durability-data vehicle is not available, the highest selling configuration from either of the model years is preferred. If it is not practical to evaluate the change on a single vehicle, other vehicle differences which could affect catalyst temperatures should be minimized. Again, configurations representing highest sales from each model year should be used if practical.

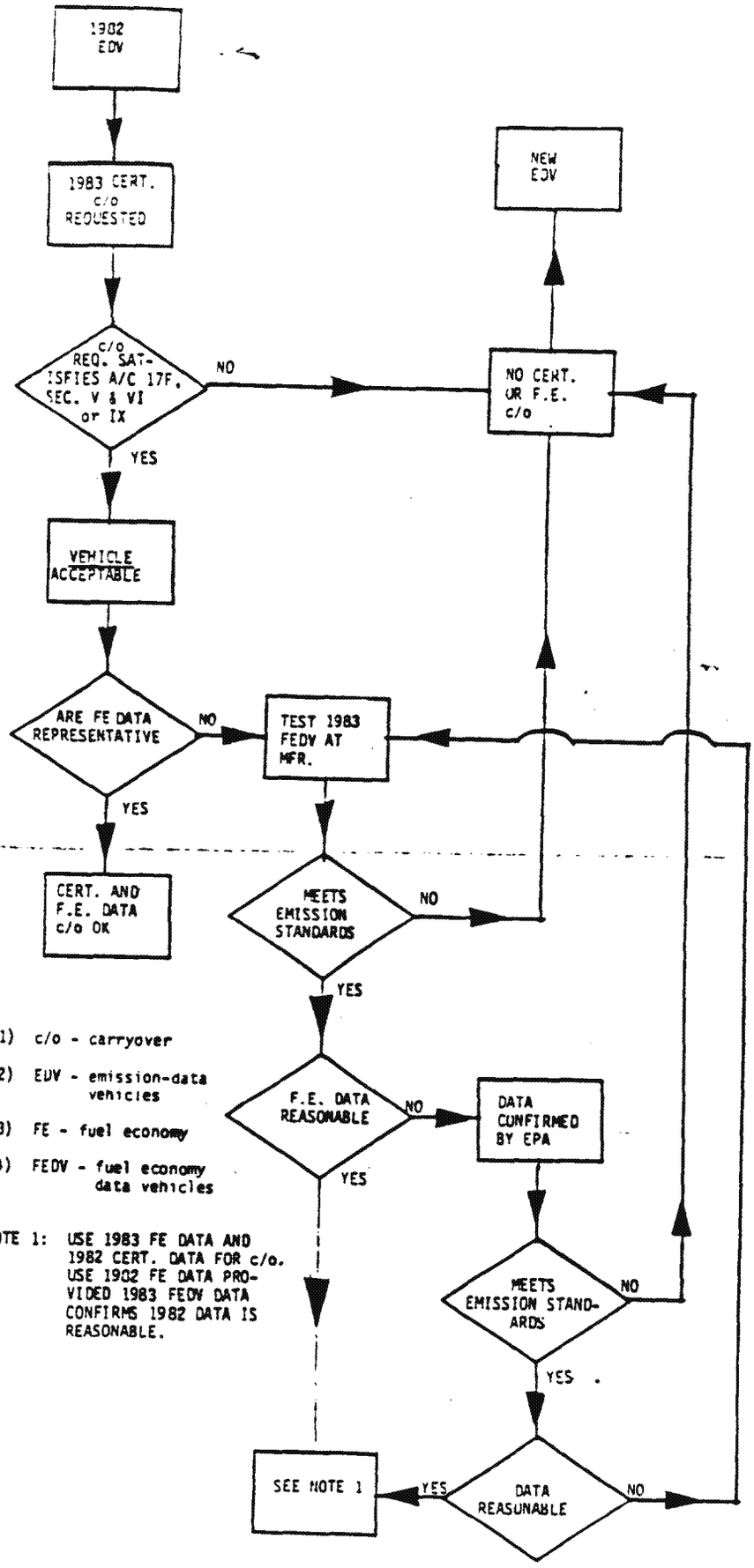
Thermocouples should be located to provide accurate measurement of maximum temperatures. Each manufacturer should obtain a description of such location from his catalyst supplier and retain this with the rest of the documentation. If this is not possible, for monolith catalysts, thermocouples may be located within the catalyst substrate at the approximate radial center of the exhaust stream and approximately one inch downstream from the front face of the substrate. If the catalyst is composed of multiple containers or multiple substrate biscuits in the same container, more than one thermocouple is required. Locate one thermocouple within each substrate biscuit as described above. Thermocouples should not be located in the exhaust pipe, in free exhaust air, or directly in the delivery path of secondary air injection systems.

5. Carryover may not be approved for any components or systems that were used in families certified without completing the 50,000-mile certification proveout under the small-volume provisions of 40 CFR 86.082-24(e). Manufacturers must continue to submit requests to EPA for carryover involving systems or components that have not completed the 50,000-mile certification proveout. Requests for carryover may also be submitted to EPA if the 50,000-mile certification proveout has been successfully completed but a certificate was never obtained.

Revised: 1-21-88

Attachment

CARRYOVER CRITERIA FLOW CHART FOR 40 CFR PART 86 VEHICLES



(1) c/o - carryover

(2) EDV - emission-data vehicles

(3) FE - fuel economy

(4) FEDV - fuel economy data vehicles

NOTE 1: USE 1983 FE DATA AND 1982 CERT. DATA FOR c/o. USE 1982 FE DATA PROVIDED 1983 FEDV DATA CONFIRMS 1982 DATA IS REASONABLE.

Message

From: Swain, David [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=19721755371B4F7382EC6A0AEBC0BC9A-SWAIN, DAVID]
Sent: 12/6/2018 6:58:23 PM
To: MARTINS HENRIQUE [MARTINS.HENRIQUE@mahindra.com]
CC: HORTON JOHN [HORTON.JOHN@mahindra.com]
Subject: DF testing after changes
Attachments: Carry Across AC-17F cd9411 15% rule, 600 degF TEMP .pdf

Hi Henrique,
As we discussed, please follow AC17F (PDF pgs23-24) to validate new engine calibrations in the future.
-Dave

(734)214-4377

| U.S. Environmental Protection Agency |
| Compliance Division |
| Project engineer |
| 2000 Traverwood Drive |
| Ann Arbor, MI 48105 |

Please consider the environment before printing this email.

Message

From: Swain, David [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=19721755371B4F7382EC6A0AEBC0BC9A-SWAIN, DAVID]
Sent: 11/21/2018 5:40:00 PM
To: MARTINS HENRIQUE [MARTINS.HENRIQUE@mahindra.com]
CC: Green, Donzell [green.donzell@epa.gov]
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Also, do you have an electronic version of the service manual that you can mail Donzell and me?

Thank !
-Dave

From: MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Sent: Tuesday, November 20, 2018 3:37 PM
To: Swain, David <swain.david@epa.gov>
Cc: Green, Donzell <green.donzell@epa.gov>; FAHY JAMES <FAHY.JAMES@mahindra.com>; HORTON JOHN <HORTON.JOHN@mahindra.com>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Dear David,
Find attached the driver's trace for the test performed at Ex. 4 CBI earlier this year.

Please let us know a date that is convenient to ship the vehicle to the EPA laboratory.

Thanks and kind regards,

Henrique R. Martins

Sr Manager
Technical and Regulatory Affairs
Certification, Homologation, and Compliance
Mahindra Automotive North American Technical Center
275 Rex Blvd
Auburn Hills, MI 48326
(248) 268-6600

Mahindra Rise

From: Swain, David <swain.david@epa.gov>
Sent: Monday, November 19, 2018 7:01 PM
To: HORTON JOHN <HORTON.JOHN@mahindra.com>; MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Cc: Green, Donzell <green.donzell@epa.gov>; FAHY JAMES <FAHY.JAMES@mahindra.com>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Thank-you ! Do you have the driver's trace too?

From: HORTON JOHN <HORTON.JOHN@mahindra.com>
Sent: Friday, November 16, 2018 7:15 PM
To: Swain, David <swain.david@epa.gov>; MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>

Cc: Green, Donzell <green.donzell@epa.gov>; FAHY JAMES <FAHY.JAMES@mahindra.com>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

David,

Per your request.
These results were from a development test at another facility Ex. 4 CBI earlier this year.

Total Result (weighted)

Weighted	THC[g/mile]	CO[g/mile]	CO_2[g/mile]	NO_X[g/mile]	CH_4[g/mile]	N_2O[g/mile]	NMHC[g/mile]	HC+NO_X[g/mile]	***Fuel E***
Mass per Dist.	Ex. 4 CBI								
Mass per Dist. (rounded)									
Mass per Dist. (rounded) per km									

Particulate Result

	Bag 1	Bag 2	Bag 3	Bag 4
Filter ID	Ex. 4 CBI			
Particulate Sample				
Mass				
Mass Corr Factor				
Mass of Particulate Emission				
Specific Particulate Emission (BG Corr)				
Weighted Specific Particulate Emissions				

From: Swain, David <swain.david@epa.gov>
Sent: Friday, November 16, 2018 6:49 PM
To: HORTON JOHN <HORTON.JOHN@mahindra.com>; MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Cc: Green, Donzell <green.donzell@epa.gov>; FAHY JAMES <FAHY.JAMES@mahindra.com>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Thank-you Mr. Horton,
Is it possible you and/or Henrique can please share the PM data again?
I can't locate it.

Thanks,
-Dave Swain

From: HORTON JOHN <HORTON.JOHN@mahindra.com>
Sent: Friday, November 16, 2018 7:41 AM
To: Swain, David <swain.david@epa.gov>; MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Cc: Green, Donzell <green.donzell@epa.gov>; FAHY JAMES <FAHY.JAMES@mahindra.com>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

David,

Henrique is on vacation so I will answer in his stead.

Ex. 4 CBI

The vehicle is ready to ship.

Regards,

John Horton
Sr. Emissions Compliance Engineer
Office of Technical and Regulatory Affairs
Mahindra North American Technical Center
275 Rex Blvd Auburn Hills, MI 48326, USA
Email: horton.john@mahindra.com
Ex. 6 Personal Privacy (PP)
Mahindra
Rise.

From: Swain, David <swain.david@epa.gov>
Sent: Thursday, November 15, 2018 6:22 PM
To: MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Cc: Green, Donzell <green.donzell@epa.gov>; HORTON JOHN <HORTON.JOHN@mahindra.com>; FAHY JAMES

<FAHY.JAMES@mahindra.com>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Thank-you Henrique.
I did not ask for you to test it, but I was very interested in any results you have. Rather than make an estimate for which of our test cells is most appropriate to use to test it, your results will help guide me, so I appreciate it.

Also, did you take any particulate measurements or N2O measurements?

We are nearly ready to receive it. I will know more Monday, if it is ok to ship.

Thank-you,
-David Swain

From: MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Sent: Wednesday, November 14, 2018 2:26 PM
To: Swain, David <swain.david@epa.gov>
Cc: Green, Donzell <green.donzell@epa.gov>; HORTON JOHN <HORTON.JOHN@mahindra.com>; FAHY JAMES <FAHY.JAMES@mahindra.com>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Dear David,
As per your request, Ex. 4 CBI performed Emissions testing yesterday. The test was executed Ex. 4 CBI without the presence of MNATC, Inc. personnel.
The results are compliant and consistent with other testing (please find the testing results attached to this email).
The vehicle custody form needs to be updated to reflect this additional activity (the emissions testing), please let me know if I can send you the updated form by email.
Please let me also know a date that is convenient to ship the vehicle to the EPA laboratory.

Thanks and kind regards,

Henrique R. Martins

Sr Manager
Technical and Regulatory Affairs
Certification, Homologation, and Compliance
Mahindra Automotive North American Technical Center
275 Rex Blvd
Auburn Hills, MI 48326
(248) 268-6600

From: MARTINS HENRIQUE
Sent: Friday, November 9, 2018 4:06 PM
To: Swain, David <swain.david@epa.gov>
Cc: Green, Donzell <green.donzell@epa.gov>; HORTON JOHN <HORTON.JOHN@mahindra.com>; FAHY JAMES <FAHY.JAMES@mahindra.com>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Dear David,
Thank you for the quick response.
I will contact Ex. 4 CBI and inquire about their availability and then inform you whether we will need extension on the required delivery date.

Thanks and kind regards,

Henrique R. Martins

Sr Manager
Technical and Regulatory Affairs
Certification, Homologation, and Compliance
Mahindra Automotive North American Technical Center
275 Rex Blvd
Auburn Hills, MI 48326
(248) 268-6600

From: Swain, David <swain.david@epa.gov>
Sent: Friday, November 9, 2018 4:01 PM
To: MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Cc: Green, Donzell <green.donzell@epa.gov>; HORTON JOHN <HORTON.JOHN@mahindra.com>; FAHY JAMES <FAHY.JAMES@mahindra.com>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Hi Henrique,
I am interested in comparing your results with ours, because we do not normally test vehicles that do not have traps. But if Ex. 4 CBI does not have available testing within the next week, I understand. Upon request, we can extend any required delivery date if the reason is that you need to wait for a testing slot to become available.

-Dave

From: MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Sent: Friday, November 09, 2018 3:54 PM
To: Swain, David <swain.david@epa.gov>
Cc: Green, Donzell <green.donzell@epa.gov>; HORTON JOHN <HORTON.JOHN@mahindra.com>; FAHY JAMES <FAHY.JAMES@mahindra.com>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Dear David,
We have only requested Ex. 4 CBI to carry-out service accumulation as instructed in the Test Order 18-ATVB-PE-68.
Please inform us if EPA wants any additional preparations that were not listed in the Test Order 18-ATVB-PE-68 to be performed prior to delivery.
Also, please let us know a date that is more convenient for EPA for the shipment.

Meanwhile I will communicate our logistics team to cancel the shipment on Nov 12, 2018 and wait for your direction.

Thanks and kind regards,
Henrique R. Martins

Sr Manager
Technical and Regulatory Affairs
Certification, Homologation, and Compliance
Mahindra Automotive North American Technical Center
275 Rex Blvd
Auburn Hills, MI 48326
(248) 268-6600

From: Swain, David <swain.david@epa.gov>
Sent: Friday, November 9, 2018 2:25 PM
To: MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Cc: Green, Donzell <green.donzell@epa.gov>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Please do not ship it yet.
Have you tested it?

From: MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Sent: Friday, November 09, 2018 11:37 AM
To: Swain, David <swain.david@epa.gov>
Cc: Green, Donzell <green.donzell@epa.gov>; Hoban, John <Hoban.John@epa.gov>; HORTON JOHN <HORTON.JOHN@mahindra.com>; FAHY JAMES <FAHY.JAMES@mahindra.com>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Dear David,
This email is to inform you that the Service Accumulation is now complete.
I went to Ex. 4 CBI yesterday to review and sign the forms listed in attachments 1,2 and 3 of the Test Order letter sent by EPA.
A binder containing all the forms (as all as other required documents like Operator's Guide) in inside the storage compartment located under the driver seat.
The storage compartment is locked (keys are on the same key holder as the ignition keys) and the binder is wrapped in a plastic bag.

We are taking care of the arrangements to ship the vehicle to the EPA test laboratory. Shipment is planned for Nov 12, 2018.
Our shipping request has the contact information supplied in the Test Order letter sent by EPA.
Please let me know if this date is convenient to EPA or if you would suggest another date.
Also, please let us know should you have additional instructions for the delivery.

I will fill attachment 4 with the list of representatives to witness the test vehicle set-up as soon as EPA confirms the test date.

Thanks and kind regards,
Henrique R. Martins

Sr Manager
Technical and Regulatory Affairs
Certification, Homologation, and Compliance
Mahindra Automotive North American Technical Center
275 Rex Blvd

Auburn Hills, MI 48326
(248) 268-6600

From: MARTINS HENRIQUE
Sent: Friday, November 2, 2018 3:22 PM
To: 'Swain, David' <swain.david@epa.gov>
Cc: 'Green, Donzell' <green.donzell@epa.gov>; 'Hoban, John' <Hoban.John@epa.gov>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Dear David,

So far, based on the information we have from Ex. 4 CBI we do not believe we will need extension on the test order. When the vehicle is ready to ship from Ex. 4 CBI we will notify you (and cc Donzell Green and John Hoban as per your request).

Thanks and kind regards,

Henrique R. Martins

Sr Manager
Technical and Regulatory Affairs
Certification, Homologation, and Compliance
Mahindra Automotive North American Technical Center
275 Rex Blvd
Auburn Hills, MI 48326
(248) 268-6600

From: Swain, David <swain.david@epa.gov>
Sent: Friday, November 2, 2018 11:03 AM
To: MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Cc: Ex. 4 CBI HORTON JOHN <HORTON.JOHN@mahindra.com>; FAHY JAMES <FAHY.JAMES@mahindra.com>; Green, Donzell <green.donzell@epa.gov>; Hoban, John <Hoban.John@epa.gov>; Chen, Emily <Chen.Emily@epa.gov>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Mr. Martins,
If Mahindra would like EPA to extend the test order delivery date to NVFEL, we can do this informally via email. Please email me the request, and please make sure to keep Donzell Green and John Hoban in the cc.

Please do not contact John Hoban. Please only keep him in the cc of all correspondence until further notice.

Thank-you,
-David Swain

From: MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Sent: Friday, November 02, 2018 10:34 AM
To: Swain, David <swain.david@epa.gov>; Green, Donzell <green.donzell@epa.gov>; Jackson, Cleophas

<jackson.cleophas@epa.gov>
Cc: Ex. 4 CBI HORTON JOHN <HORTON.JOHN@mahindra.com>; FAHY JAMES <FAHY.JAMES@mahindra.com>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Dear David,
Based on an email we recently received from Ex. 4 CBI is planning on maintenance of their Emissions benches until November 12, 2018 Ex. 4 CBI , could you please confirm?).
Please let us know your decision regarding the test location and we will make sure to supply the vehicle at the date and place required by EPA.

Thanks and kind regards,

Henrique R. Martins

Sr Manager
Technical and Regulatory Affairs
Certification, Homologation, and Compliance
Mahindra Automotive North American Technical Center
275 Rex Blvd
Auburn Hills, MI 48326
(248) 268-6600

From: Swain, David <swain.david@epa.gov>
Sent: Thursday, November 1, 2018 12:25 PM
To: MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Cc: Ex. 4 CBI Green, Donzell <green.donzell@epa.gov>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Mr. Martins,
Please reply-all. Will Ex. 4 CBI be able to perform an emissions test?
Thank-you,
-David Swain

From: MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Sent: Wednesday, October 31, 2018 10:52 AM
To: Jackson, Cleophas <jackson.cleophas@epa.gov>; Swain, David <swain.david@epa.gov>; Green, Donzell <green.donzell@epa.gov>
Cc: HORTON JOHN <HORTON.JOHN@mahindra.com>; FAHY JAMES <FAHY.JAMES@mahindra.com>
Subject: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Dear All,

This note is to inform you that the ROXOR vehicle selected by EPA for Compliance testing was shipped to Ex. 4 CBI yesterday. According to Ex. 4 CBI personnel, service accumulation will be initiated today and should be completed by sometime tomorrow.

The contacts of the Ex. 4 CBI personnel managing the service accumulation are:

Ex. 4 CBI

Please let me know the date the test will be scheduled and confirm the test location, so I can fill out the "Statement of Manufacturer Intent to Witness Test Vehicle Set-up" form.
Also, I wanted to let you know the communication I received regarding this test order (Test Order 18-ATVB-PE-68) only contains attachment 1, 3 and 4.
Please let me know in case you also require attachment 2 to be filled and submitted.
Finally, please send me the document you referred during our meeting as "Blue Sheet" so I can fill it out and submit to you.

Thanks and kind regards,

Henrique R. Martins

Sr Manager
Technical and Regulatory Affairs
Certification, Homologation, and Compliance
Mahindra Automotive North American Technical Center
275 Rex Blvd
Auburn Hills, MI 48326
(248) 268-6600

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immediately and delete it from your system. The views expressed in this E-mail message (including the enclosure/(s) or attachment/(s) if any) are those of the individual sender. ----------

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Message

From: Swain, David [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=19721755371B4F7382EC6A0AEBC0BC9A-SWAIN, DAVID]
Sent: 11/21/2018 5:31:53 PM
To: MARTINS HENRIQUE [MARTINS.HENRIQUE@mahindra.com]
CC: Green, Donzell [green.donzell@epa.gov]; FAHY JAMES [FAHY.JAMES@mahindra.com]; HORTON JOHN [HORTON.JOHN@mahindra.com]
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Mr. Martins,
Can you please send the vehicle Friday, or sooner? We would like most of the day Monday to prep the vehicle, bring it to temperature, etc.
Thank-you,
-David Swain

From: MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Sent: Tuesday, November 20, 2018 3:37 PM
To: Swain, David <swain.david@epa.gov>
Cc: Green, Donzell <green.donzell@epa.gov>; FAHY JAMES <FAHY.JAMES@mahindra.com>; HORTON JOHN <HORTON.JOHN@mahindra.com>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Dear David,
Find attached the driver's trace for the test performed at Ex. 4 CBI earlier this year.

Please let us know a date that is convenient to ship the vehicle to the EPA laboratory.

Thanks and kind regards,

Henrique R. Martins

Sr Manager
Technical and Regulatory Affairs
Certification, Homologation, and Compliance
Mahindra Automotive North American Technical Center
275 Rex Blvd
Auburn Hills, MI 48326
(248) 268-6600

From: Swain, David <swain.david@epa.gov>
Sent: Monday, November 19, 2018 7:01 PM
To: HORTON JOHN <HORTON.JOHN@mahindra.com>; MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Cc: Green, Donzell <green.donzell@epa.gov>; FAHY JAMES <FAHY.JAMES@mahindra.com>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Thank-you ! Do you have the driver's trace too?

From: HORTON JOHN <HORTON.JOHN@mahindra.com>
Sent: Friday, November 16, 2018 7:15 PM
To: Swain, David <swain.david@epa.gov>; MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Cc: Green, Donzell <green.donzell@epa.gov>; FAHY JAMES <FAHY.JAMES@mahindra.com>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

David,

Per your request.
These results were from a development test at another facility Ex. 4 CBI earlier this year.

Total Result (weighted)

Weighted	THC[g/mile]	CO[g/mile]	CO_2[g/mile]	NO_x[g/mile]	CH_4[g/mile]	N_2O[g/mile]	NMHC[g/mile]	HC+NO_x[g/mile]	***Fuel E***
Mass per Dist.	Ex. 4 CBI								
Mass per Dist. (rounded)									
Mass per Dist. (rounded) per km									

Particulate Result

	Bag 1	Bag 2	Bag 3	Bag 4
Filter ID	Ex. 4 CBI			
Particulate Sample				
Mass				
Mass Corr Factor				
Mass of Particulate Emission				
Specific Particulate Emission (BG Corr)				
Weighted Specific Particulate Emissions				

From: Swain, David <swain.david@epa.gov>
Sent: Friday, November 16, 2018 6:49 PM
To: HORTON JOHN <HORTON.JOHN@mahindra.com>; MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>

Cc: Green, Donzell <green.donzell@epa.gov>; FAHY JAMES <FAHY.JAMES@mahindra.com>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Thank-you Mr. Horton,
Is it possible you and/or Henrique can please share the PM data again?
I can't locate it.

Thanks,
-Dave Swain

From: HORTON JOHN <HORTON.JOHN@mahindra.com>
Sent: Friday, November 16, 2018 7:41 AM
To: Swain, David <swain.david@epa.gov>; MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Cc: Green, Donzell <green.donzell@epa.gov>; FAHY JAMES <FAHY.JAMES@mahindra.com>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

David,

Henrique is on vacation so I will answer in his stead.

Ex. 4 CBI

The vehicle is ready to ship.

Regards,

John Horton
Sr. Emissions Compliance Engineer
Office of Technical and Regulatory Affairs
Mahindra North American Technical Center
275 Rex Blvd Auburn Hills, MI 48326, USA
Email: horton.john@mahindra.com
Ex. 6 Personal Privacy (PP)
Mahindra
Rise.

From: Swain, David <swain.david@epa.gov>
Sent: Thursday, November 15, 2018 6:22 PM
To: MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Cc: Green, Donzell <green.donzell@epa.gov>; HORTON JOHN <HORTON.JOHN@mahindra.com>; FAHY JAMES <FAHY.JAMES@mahindra.com>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Thank-you Henrique.
I did not ask for you to test it, but I was very interested in any results you have. Rather than make an estimate for which of our test cells is most appropriate to use to test it, your results will help guide me, so I appreciate it.

Also, did you take any particulate measurements or N2O measurements?

We are nearly ready to receive it. I will know more Monday, if it is ok to ship.

Thank-you,
-David Swain

From: MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Sent: Wednesday, November 14, 2018 2:26 PM
To: Swain, David <swain.david@epa.gov>
Cc: Green, Donzell <green.donzell@epa.gov>; HORTON JOHN <HORTON.JOHN@mahindra.com>; FAHY JAMES <FAHY.JAMES@mahindra.com>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Dear David,
As per your request, Ex. 4 CBI to performed Emissions testing yesterday. The test was executed by Ex. 4 CBI without the presence of MNATC, Inc. personnel.
The results are compliant and consistent with other testing (please find the testing results attached to this email).
The vehicle custody form needs to be updated to reflect this additional activity (the emissions testing), please let me know if I can send you the updated form by email.
Please let me also know a date that is convenient to ship the vehicle to the EPA laboratory.

Thanks and kind regards,

Henrique R. Martins

Sr Manager
Technical and Regulatory Affairs
Certification, Homologation, and Compliance
Mahindra Automotive North American Technical Center
275 Rex Blvd
Auburn Hills, MI 48326
(248) 268-6600

From: MARTINS HENRIQUE
Sent: Friday, November 9, 2018 4:06 PM
To: Swain, David <swain.david@epa.gov>

Cc: Green, Donzell <green.donzell@epa.gov>; HORTON JOHN <HORTON.JOHN@mahindra.com>; FAHY JAMES <FAHY.JAMES@mahindra.com>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Dear David,
Thank you for the quick response.
I will contact Ex. 4 CBI and inquire about their availability and then inform you whether we will need extension on the required delivery date.

Thanks and kind regards,

Henrique R. Martins

Sr Manager
Technical and Regulatory Affairs
Certification, Homologation, and Compliance
Mahindra Automotive North American Technical Center
275 Rex Blvd
Auburn Hills, MI 48326
(248) 268-6600

From: Swain, David <swain.david@epa.gov>
Sent: Friday, November 9, 2018 4:01 PM
To: MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Cc: Green, Donzell <green.donzell@epa.gov>; HORTON JOHN <HORTON.JOHN@mahindra.com>; FAHY JAMES <FAHY.JAMES@mahindra.com>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Hi Henrique,
I am interested in comparing your results with ours, because we do not normally test vehicles that do not have traps. But if Ex. 4 CBI does not have available testing within the next week, I understand. Upon request, we can extend any required delivery date if the reason is that you need to wait for a testing slot to become available.

-Dave

From: MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Sent: Friday, November 09, 2018 3:54 PM
To: Swain, David <swain.david@epa.gov>
Cc: Green, Donzell <green.donzell@epa.gov>; HORTON JOHN <HORTON.JOHN@mahindra.com>; FAHY JAMES <FAHY.JAMES@mahindra.com>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Dear David,
We have only requested Ex. 4 CBI to carry-out service accumulation as instructed in the Test Order 18-ATVB-PE-68.
Please inform us if EPA wants any additional preparations that were not listed in the Test Order 18-ATVB-PE-68 to be performed prior to delivery.
Also, please let us know a date that is more convenient for EPA for the shipment.

Meanwhile I will communicate our logistics team to cancel the shipment on Nov 12, 2018 and wait for your direction.

Thanks and kind regards,

Henrique R. Martins

Sr Manager
Technical and Regulatory Affairs
Certification, Homologation, and Compliance
Mahindra Automotive North American Technical Center
275 Rex Blvd
Auburn Hills, MI 48326
(248) 268-6600

From: Swain, David <swain.david@epa.gov>
Sent: Friday, November 9, 2018 2:25 PM
To: MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Cc: Green, Donzell <green.donzell@epa.gov>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Please do not ship it yet.
Have you tested it?

From: MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Sent: Friday, November 09, 2018 11:37 AM
To: Swain, David <swain.david@epa.gov>
Cc: Green, Donzell <green.donzell@epa.gov>; Hoban, John <Hoban.John@epa.gov>; HORTON JOHN <HORTON.JOHN@mahindra.com>; FAHY JAMES <FAHY.JAMES@mahindra.com>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Dear David,
This email is to inform you that the Service Accumulation is now complete.
I went to Ex. 4 CBI yesterday to review and sign the forms listed in attachments 1,2 and 3 of the Test Order letter sent by EPA.
A binder containing all the forms (as all as other required documents like Operator's Guide) in inside the storage compartment located under the driver seat.
The storage compartment is locked (keys are on the same key holder as the ignition keys) and the binder is wrapped in a plastic bag.

We are taking care of the arrangements to ship the vehicle to the EPA test laboratory. Shipment is planned for Nov 12, 2018.
Our shipping request has the contact information supplied in the Test Order letter sent by EPA.
Please let me know if this date is convenient to EPA or if you would suggest another date.
Also, please let us know should you have additional instructions for the delivery.

I will fill attachment 4 with the list of representatives to witness the test vehicle set-up as soon as EPA confirms the test date.

Thanks and kind regards,

Henrique R. Martins

Sr Manager

Technical and Regulatory Affairs
Certification, Homologation, and Compliance
Mahindra Automotive North American Technical Center
275 Rex Blvd
Auburn Hills, MI 48326
(248) 268-6600

From: MARTINS HENRIQUE
Sent: Friday, November 2, 2018 3:22 PM
To: 'Swain, David' <swain.david@epa.gov>
Cc: 'Green, Donzell' <green.donzell@epa.gov>; 'Hoban, John' <Hoban.John@epa.gov>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Dear David,

So far, based on the information we have from Ex. 4 CBI we do not believe we will need extension on the test order. When the vehicle is ready to ship from Ex. 4 CBI we will notify you (and cc Donzell Green and John Hoban as per your request).

Thanks and kind regards,

Henrique R. Martins

Sr Manager
Technical and Regulatory Affairs
Certification, Homologation, and Compliance
Mahindra Automotive North American Technical Center
275 Rex Blvd
Auburn Hills, MI 48326
(248) 268-6600

From: Swain, David <swain.david@epa.gov>
Sent: Friday, November 2, 2018 11:03 AM
To: MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Cc: Ex. 4 CBI HORTON JOHN <HORTON.JOHN@mahindra.com>; FAHY JAMES <FAHY.JAMES@mahindra.com>; Green, Donzell <green.donzell@epa.gov>; Hoban, John <Hoban.John@epa.gov>; Chen, Emily <Chen.Emily@epa.gov>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Mr. Martins,
If Mahindra would like EPA to extend the test order delivery date to NVFEL, we can do this informally via email. Please email me the request, and please make sure to keep Donzell Green and John Hoban in the cc.

Please do not contact John Hoban. Please only keep him in the cc of all correspondence until further notice.

Thank-you,
-David Swain

From: MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Sent: Friday, November 02, 2018 10:34 AM
To: Swain, David <swain.david@epa.gov>; Green, Donzell <green.donzell@epa.gov>; Jackson, Cleophas <jackson.cleophas@epa.gov>
Cc: Ex. 4 CBI HORTON JOHN <HORTON.JOHN@mahindra.com>; FAHY JAMES <FAHY.JAMES@mahindra.com>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Dear David,
Based on an email we recently received from Ex. 4 CBI is planning on maintenance of their Emissions benches until November 12, 2018 (Ex. 4 CBI could you please confirm?).
Please let us know your decision regarding the test location and we will make sure to supply the vehicle at the date and place required by EPA.

Thanks and kind regards,

Henrique R. Martins

Sr Manager
Technical and Regulatory Affairs
Certification, Homologation, and Compliance
Mahindra Automotive North American Technical Center
275 Rex Blvd
Auburn Hills, MI 48326
(248) 268-6600

From: Swain, David <swain.david@epa.gov>
Sent: Thursday, November 1, 2018 12:25 PM
To: MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Cc: Ex. 4 CBI Green, Donzell <green.donzell@epa.gov>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Mr. Martins,
Please reply-all. Will Ex. 4 CBI be able to perform an emissions test?
Thank-you,
-David Swain

From: MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Sent: Wednesday, October 31, 2018 10:52 AM
To: Jackson, Cleophas <jackson.cleophas@epa.gov>; Swain, David <swain.david@epa.gov>; Green, Donzell <green.donzell@epa.gov>
Cc: HORTON JOHN <HORTON.JOHN@mahindra.com>; FAHY JAMES <FAHY.JAMES@mahindra.com>
Subject: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Dear All,

This note is to inform you that the ROXOR vehicle selected by EPA for Compliance testing was shipped to Ex. 4 CBI yesterday. According to Ex. 4 CBI personnel, service accumulation will be initiated today and should be completed by sometime tomorrow.

The contacts of the Ex. 4 CBI personnel managing the service accumulation are:

Ex. 4 CBI

Please let me know the date the test will be scheduled and confirm the test location, so I can fill out the "Statement of Manufacturer Intent to Witness Test Vehicle Set-up" form.
Also, I wanted to let you know the communication I received regarding this test order (Test Order 18-ATVB-PE-68) only contains attachment 1, 3 and 4.
Please let me know in case you also require attachment 2 to be filled and submitted.
Finally, please send me the document you referred during our meeting as "Blue Sheet" so I can fill it out and submit to you.

Thanks and kind regards,

Henrique R. Martins

Sr Manager
Technical and Regulatory Affairs
Certification, Homologation, and Compliance
Mahindra Automotive North American Technical Center
275 Rex Blvd
Auburn Hills, MI 48326
(248) 268-6600

Mahindra Rise

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the enclosure/(s) or attachment/(s) if any) are those of the individual sender. ----------

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Message

From: Swain, David [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=19721755371B4F7382EC6A0AEBC0BC9A-SWAIN, DAVID]
Sent: 4/18/2017 5:36:45 PM
To: Lit-Mian Chan [lchan@ramboll.com]
CC: MARTINS HENRIQUE (MARTINS.HENRIQUE@mahindra.com) [MARTINS.HENRIQUE@mahindra.com]
Subject: RE: Mahindra's Questions
Attachments: AECD base engine lambda map example.xlsx

Example of base engine map

From: Lit-Mian Chan [mailto:lchan@ramboll.com]
Sent: Tuesday, April 18, 2017 1:14 PM
To: Swain, David <swain.david@epa.gov>
Cc: MARTINS HENRIQUE (MARTINS.HENRIQUE@mahindra.com) <MARTINS.HENRIQUE@mahindra.com>
Subject: Mahindra's Questions

1. Modified FTP-75 Cycle – Request EPA approval for ATV cycle (§1051.501(b) & paragraph (b) of appendix I to 40 CFR part 86);
2. Approval of using 11 Lap test protocol, durability mileage accumulation at top speed of 45 mph (CFR Title 40 Part 86 Appendix IV-(b);
3. Any special comments regarding AECD information required for diesel ATV;
4. EPA's confirmation of road load mass calculations using EPA's guidance (86-529-98-extrapolated-2014-07-31) table; and
5. Any special comments about ECU consumer tamper-proof methods in regards speed restriction.

Lit-Mian Chan | Principal
RAMBOLL ENVIRON
773 San Marin Drive, Suite 2115 | Novato, CA 94998
T: +1 415 899 0751 | F: +1 415 899 0707 | M: +1 916 337 1479
LChan@ramboll.com
www.ramboll-environ.com

Throttle vs. Speed Base engine Lambda map contours

Highlited region indicates region where EPA cycle runs

Throttle (%)	Speed 1000	2000	3000
100	0.90	0.90	0.90
90	0.95	0.95	0.95
80	1.00	1.00	1.00
70	1.00	1.00	1.00
60	1.00	1.00	1.00
50	1.00	1.00	1.00
40	1.00	1.00	1.00
30	1.00	1.00	1.00
20	1.00	1.00	1.00
10	1.00	1.00	1.00
0	1.00	1.00	1.00

Red indicates open loop targets

4000	5000	6000	7000	8000	9000	10000
0.90	0.90	0.90	0.90	0.90	0.90	0.90
0.95	0.95	0.95	0.95	0.95	0.95	0.95
1.00	1.00	1.00	1.00	1.00	1.00	0.95
1.00	1.00	1.00	1.00	1.00	1.00	0.95
1.00	1.00	1.00	1.00	1.00	1.00	0.95
1.00	1.00	1.00	1.00	1.00	1.00	0.95
1.00	1.00	1.00	1.00	1.00	1.00	0.95
1.00	1.00	1.00	1.00	1.00	1.00	0.95
1.00	1.00	1.00	1.00	1.00	1.00	0.95
1.00	1.00	1.00	1.00	1.00	1.00	0.95
1.00	1.00	1.00	99.00	99.00	99.00	99.00

Cell: K11
Comment: Swain, David:
Top speed 55kph

Message

From: Swain, David [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=19721755371B4F7382EC6A0AEBC0BC9A-SWAIN, DAVID]
Sent: 11/20/2018 12:01:27 AM
To: HORTON JOHN [HORTON.JOHN@mahindra.com]; MARTINS HENRIQUE [MARTINS.HENRIQUE@mahindra.com]
CC: Green, Donzell [green.donzell@epa.gov]; FAHY JAMES [FAHY.JAMES@mahindra.com]
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Thank-you ! Do you have the driver's trace too?

From: HORTON JOHN <HORTON.JOHN@mahindra.com>
Sent: Friday, November 16, 2018 7:15 PM
To: Swain, David <swain.david@epa.gov>; MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Cc: Green, Donzell <green.donzell@epa.gov>; FAHY JAMES <FAHY.JAMES@mahindra.com>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

David,

Per your request.
These results were from a development test at another facility Ex. 4 CBI earlier this year.

Total Result (weighted)

Weighted	THC[g/mile]	CO[g/mile]	CO_2[g/mile]	NO_x[g/mile]	CH_4[g/mile]	N_2O[g/mile]	NMHC[g/mile]	HC+NO_x[g/mile]	***Fuel E***
Mass per Dist.	Ex. 4 CBI								
Mass per Dist. (rounded)									
Mass per Dist. (rounded) per km									

Particulate Result

	Bag 1	Bag 2	Bag 3	Bag 4
Filter ID	Ex. 4 CBI			
Particulate Sample Mass				
Mass Corr Factor				
Mass of Particulate Emission				

Specific Particulate Emission (BG Corr)

Weighted Specific Particulate Emissions

Ex. 4 CBI

From: Swain, David <swain.david@epa.gov>
Sent: Friday, November 16, 2018 6:49 PM
To: HORTON JOHN <HORTON.JOHN@mahindra.com>; MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Cc: Green, Donzell <green.donzell@epa.gov>; FAHY JAMES <FAHY.JAMES@mahindra.com>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Thank-you Mr. Horton,
Is it possible you and/or Henrique can please share the PM data again?
I can't locate it.

Thanks,
-Dave Swain

From: HORTON JOHN <HORTON.JOHN@mahindra.com>
Sent: Friday, November 16, 2018 7:41 AM
To: Swain, David <swain.david@epa.gov>; MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Cc: Green, Donzell <green.donzell@epa.gov>; FAHY JAMES <FAHY.JAMES@mahindra.com>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

David,

Henrique is on vacation so I will answer in his stead.

Ex. 4 CBI

The vehicle is ready to ship.

Regards,

John Horton
Sr. Emissions Compliance Engineer
Office of Technical and Regulatory Affairs

Mahindra North American Technical Center
275 Rex Blvd Auburn Hills, MI 48326, USA
Email: horton.john@mahindra.com
Ex. 6 Personal Privacy (PP)
Mahindra
Rise.

From: Swain, David <swain.david@epa.gov>
Sent: Thursday, November 15, 2018 6:22 PM
To: MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Cc: Green, Donzell <green.donzell@epa.gov>; HORTON JOHN <HORTON.JOHN@mahindra.com>; FAHY JAMES <FAHY.JAMES@mahindra.com>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Thank-you Henrique.
I did not ask for you to test it, but I was very interested in any results you have. Rather than make an estimate for which of our test cells is most appropriate to use to test it, your results will help guide me, so I appreciate it.

Also, did you take any particulate measurements or N2O measurements?

We are nearly ready to receive it. I will know more Monday, if it is ok to ship.

Thank-you,
-David Swain

From: MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Sent: Wednesday, November 14, 2018 2:26 PM
To: Swain, David <swain.david@epa.gov>
Cc: Green, Donzell <green.donzell@epa.gov>; HORTON JOHN <HORTON.JOHN@mahindra.com>; FAHY JAMES <FAHY.JAMES@mahindra.com>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Dear David,
As per your request, Ex. 4 CBI to performed Emissions testing yesterday. The test was executed by Ex. 4 CBI without the presence of MNATC, Inc. personnel.
The results are compliant and consistent with other testing (please find the testing results attached to this email).
The vehicle custody form needs to be updated to reflect this additional activity (the emissions testing), please let me know if I can send you the updated form by email.
Please let me also know a date that is convenient to ship the vehicle to the EPA laboratory.

Thanks and kind regards,

Henrique R. Martins

Sr Manager
Technical and Regulatory Affairs
Certification, Homologation, and Compliance
Mahindra Automotive North American Technical Center

275 Rex Blvd
Auburn Hills, MI 48326
(248) 268-6600

From: MARTINS HENRIQUE
Sent: Friday, November 9, 2018 4:06 PM
To: Swain, David <swain.david@epa.gov>
Cc: Green, Donzell <green.donzell@epa.gov>; HORTON JOHN <HORTON.JOHN@mahindra.com>; FAHY JAMES <FAHY.JAMES@mahindra.com>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Dear David,
Thank you for the quick response.
I will contact Ex. 4 CBI and inquire about their availability and then inform you whether we will need extension on the required delivery date.

Thanks and kind regards,

Henrique R. Martins

Sr Manager
Technical and Regulatory Affairs
Certification, Homologation, and Compliance
Mahindra Automotive North American Technical Center
275 Rex Blvd
Auburn Hills, MI 48326
(248) 268-6600

From: Swain, David <swain.david@epa.gov>
Sent: Friday, November 9, 2018 4:01 PM
To: MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Cc: Green, Donzell <green.donzell@epa.gov>; HORTON JOHN <HORTON.JOHN@mahindra.com>; FAHY JAMES <FAHY.JAMES@mahindra.com>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Hi Henrique,
I am interested in comparing your results with ours, because we do not normally test vehicles that do not have traps. But if Ex. 4 CBI does not have available testing within the next week, I understand. Upon request, we can extend any required delivery date if the reason is that you need to wait for a testing slot to become available.

-Dave

From: MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Sent: Friday, November 09, 2018 3:54 PM
To: Swain, David <swain.david@epa.gov>
Cc: Green, Donzell <green.donzell@epa.gov>; HORTON JOHN <HORTON.JOHN@mahindra.com>; FAHY JAMES

<FAHY.JAMES@mahindra.com>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Dear David,
We have only requested Ex. 4 CBI to carry-out service accumulation as instructed in the Test Order 18-ATVB-PE-68.
Please inform us if EPA wants any additional preparations that were not listed in the Test Order 18-ATVB-PE-68 to be performed prior to delivery.
Also, please let us know a date that is more convenient for EPA for the shipment.

Meanwhile I will communicate our logistics team to cancel the shipment on Nov 12, 2018 and wait for your direction.

Thanks and kind regards,

Henrique R. Martins

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Sent: Friday, November 9, 2018 2:25 PM
To: MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Cc: Green, Donzell <green.donzell@epa.gov>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Please do not ship it yet.
Have you tested it?

From: MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Sent: Friday, November 09, 2018 11:37 AM
To: Swain, David <swain.david@epa.gov>
Cc: Green, Donzell <green.donzell@epa.gov>; Hoban, John <Hoban.John@epa.gov>; HORTON JOHN <HORTON.JOHN@mahindra.com>; FAHY JAMES <FAHY.JAMES@mahindra.com>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Dear David,
This email is to inform you that the Service Accumulation is now complete.
I went to Ex. 4 CBI yesterday to review and sign the forms listed in attachments 1,2 and 3 of the Test Order letter sent by EPA.
A binder containing all the forms (as all as other required documents like Operator's Guide) in inside the storage compartment located under the driver seat.
The storage compartment is locked (keys are on the same key holder as the ignition keys) and the binder is wrapped in a plastic bag.

We are taking care of the arrangements to ship the vehicle to the EPA test laboratory. Shipment is planned for Nov 12, 2018.
Our shipping request has the contact information supplied in the Test Order letter sent by EPA.

Please let me know if this date is convenient to EPA or if you would suggest another date.
Also, please let us know should you have additional instructions for the delivery.

I will fill attachment 4 with the list of representatives to witness the test vehicle set-up as soon as EPA confirms the test date.

Thanks and kind regards,

Henrique R. Martins

Sr Manager
Technical and Regulatory Affairs
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Mahindra Automotive North American Technical Center
275 Rex Blvd
Auburn Hills, MI 48326
(248) 268-6600

From: MARTINS HENRIQUE
Sent: Friday, November 2, 2018 3:22 PM
To: 'Swain, David' <swain.david@epa.gov>
Cc: 'Green, Donzell' <green.donzell@epa.gov>; 'Hoban, John' <Hoban.John@epa.gov>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Dear David,

So far, based on the information we have from Ex. 4 CBI we do not believe we will need extension on the test order. When the vehicle is ready to ship from Ex. 4 CBI we will notify you (and cc Donzell Green and John Hoban as per your request).

Thanks and kind regards,

Henrique R. Martins

Sr Manager
Technical and Regulatory Affairs
Certification, Homologation, and Compliance
Mahindra Automotive North American Technical Center
275 Rex Blvd
Auburn Hills, MI 48326
(248) 268-6600

From: Swain, David <swain.david@epa.gov>
Sent: Friday, November 2, 2018 11:03 AM
To: MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Cc: Ex. 4 CBI HORTON JOHN <HORTON.JOHN@mahindra.com>; FAHY JAMES <FAHY.JAMES@mahindra.com>; Green, Donzell <green.donzell@epa.gov>; Hoban, John <Hoban.John@epa.gov>; Chen, Emily <Chen.Emily@epa.gov>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Mr. Martins,
If Mahindra would like EPA to extend the test order delivery date to NVFEL, we can do this informally via email. Please email me the request, and please make sure to keep Donzell Green and John Hoban in the cc.

Please do not contact John Hoban. Please only keep him in the cc of all correspondence until further notice.

Thank-you,
-David Swain

From: MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Sent: Friday, November 02, 2018 10:34 AM
To: Swain, David <swain.david@epa.gov>; Green, Donzell <green.donzell@epa.gov>; Jackson, Cleophas <jackson.cleophas@epa.gov>
Cc: Ex. 4 CBI HORTON JOHN <HORTON.JOHN@mahindra.com>; FAHY JAMES <FAHY.JAMES@mahindra.com>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Dear David,
Based on an email we recently received from Ex. 4 CBI is planning on maintenance of their Emissions benches until November 12, 2018 (Ex. 4 CBI could you please confirm?).
Please let us know your decision regarding the test location and we will make sure to supply the vehicle at the date and place required by EPA.

Thanks and kind regards,

Henrique R. Martins

Sr Manager
Technical and Regulatory Affairs
Certification, Homologation, and Compliance
Mahindra Automotive North American Technical Center
275 Rex Blvd
Auburn Hills, MI 48326
(248) 268-6600

From: Swain, David <swain.david@epa.gov>
Sent: Thursday, November 1, 2018 12:25 PM
To: MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Cc: Ex. 4 CBI ; Green, Donzell <green.donzell@epa.gov>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Mr. Martins,
Please reply-all. Will Ex. 4 CBI be able to perform an emissions test?
Thank-you,
-David Swain

From: MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Sent: Wednesday, October 31, 2018 10:52 AM
To: Jackson, Cleophas <jackson.cleophas@epa.gov>; Swain, David <swain.david@epa.gov>; Green, Donzell

<green.donzell@epa.gov>
Cc: HORTON JOHN <HORTON.JOHN@mahindra.com>; FAHY JAMES <FAHY.JAMES@mahindra.com>
Subject: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Dear All,

This note is to inform you that the ROXOR vehicle selected by EPA for Compliance testing was shipped to Ex. 4 CBI yesterday. According to Ex. 4 CBI personnel, service accumulation will be initiated today and should be completed by sometime tomorrow.

The contacts of the Ex. 4 CBI personnel managing the service accumulation are:

Ex. 4 CBI

Please let me know the date the test will be scheduled and confirm the test location, so I can fill out the "Statement of Manufacturer Intent to Witness Test Vehicle Set-up" form.
Also, I wanted to let you know the communication I received regarding this test order (Test Order 18-ATVB-PE-68) only contains attachment 1, 3 and 4.
Please let me know in case you also require attachment 2 to be filled and submitted.
Finally, please send me the document you referred during our meeting as "Blue Sheet" so I can fill it out and submit to you.

Thanks and kind regards,

Henrique R. Martins

Sr Manager
Technical and Regulatory Affairs
Certification, Homologation, and Compliance
Mahindra Automotive North American Technical Center
275 Rex Blvd
Auburn Hills, MI 48326
(248) 268-6600

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----

Message

From: Swain, David [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=19721755371B4F7382EC6A0AEBC0BC9A-SWAIN, DAVID]
Sent: 2/19/2019 10:22:06 PM
To: MARTINS HENRIQUE [MARTINS.HENRIQUE@mahindra.com]
CC: subhedar.sarang@mahindra.com; Fulper, CarlR [Fulper.Carlr@epa.gov]; Markham, Luke [markham.luke@epa.gov]; Hoban, John [Hoban.John@epa.gov]
Subject: RE: Left-hand steering
Attachments: 29c75f1fbe738183ba9b0e82f92cb98af646e7a0-1.jpg; 29c75f1fbe738183ba9b0e82f92cb98af646e7a0-2.jpg

Mr. Martins,
As we discussed, can your powertrain engineer do the following:

1) Send us the wiring diagram of the CAN bus interface showing the pinout for +CAN, -CAN, -gnd, and baud rate
2) Is it located under the hood (as in the picture attached), or near the clutch?
3) Confirm if the CAN bus interface follows J1939? or what protocol does it follow?
4) Does it use the marine style CAN connector?
5) Can you overnight a pigtail? If you can, please send it to…

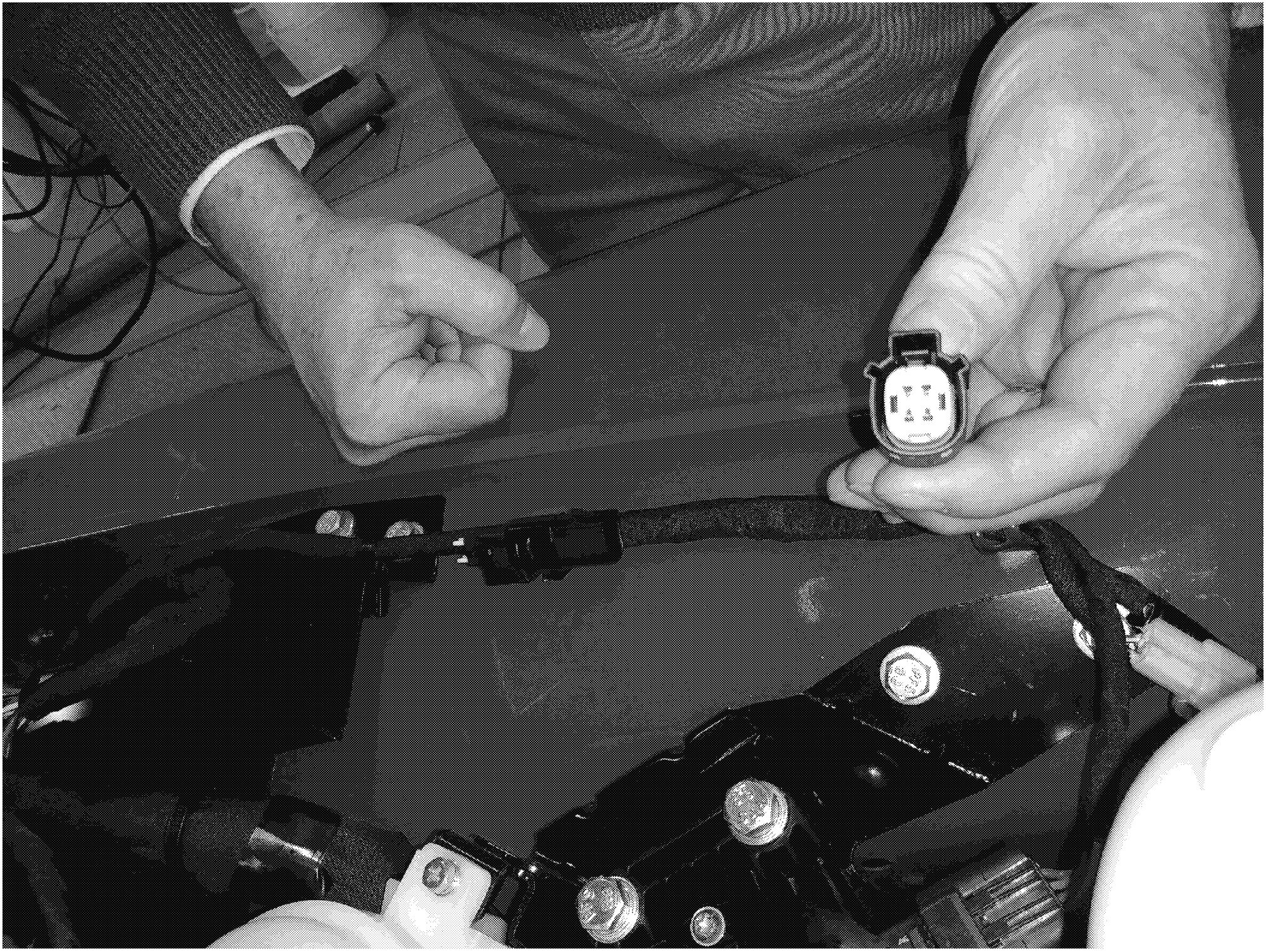
   Luke Markham,
   2565 Plymouth rd,
   Ann Arbor, MI, 48105

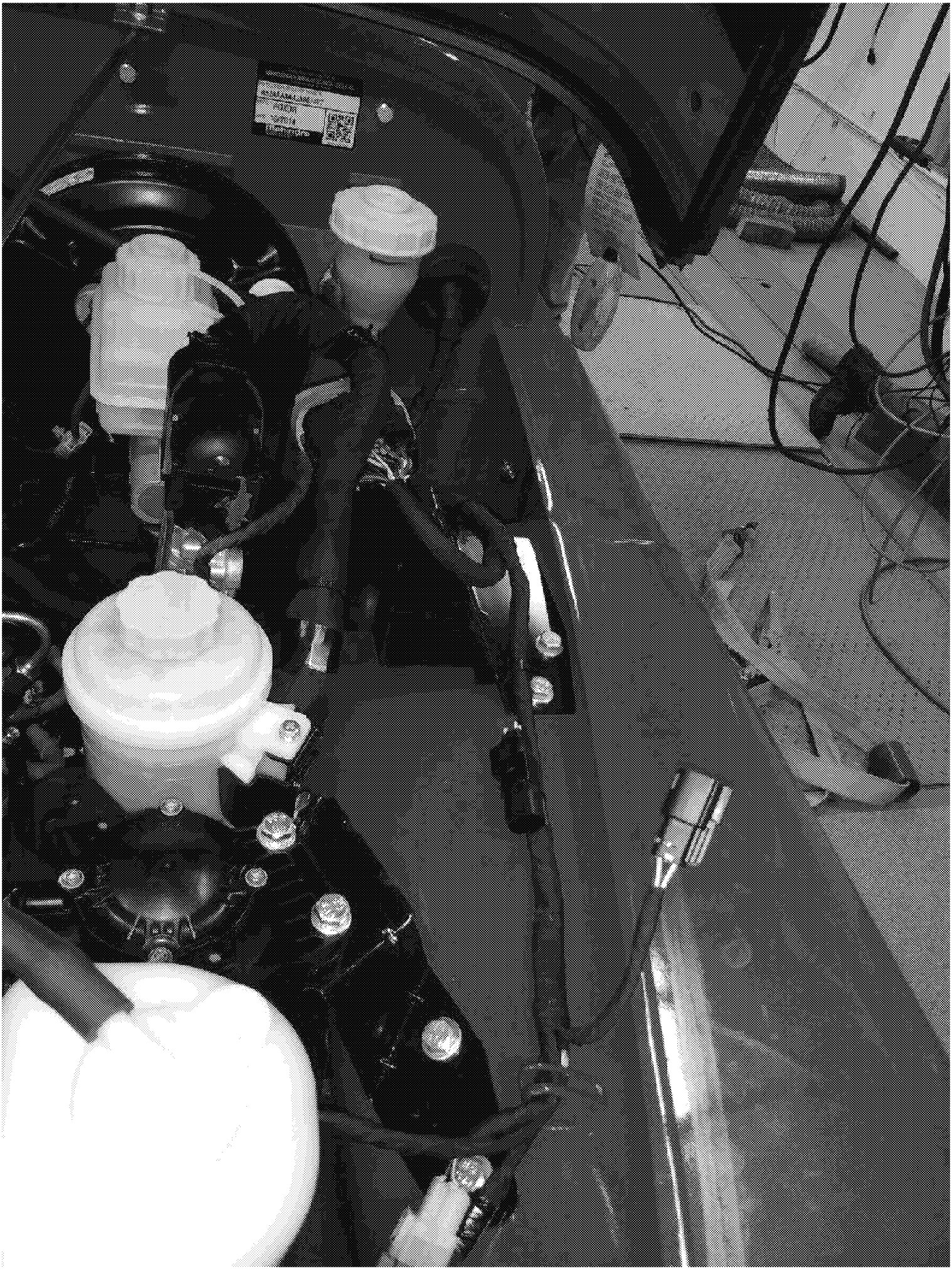
Thank-you,
-David Swain

(734)214-4377

| U.S. Environmental Protection Agency |
| Compliance Division |
| Project engineer |
| 2000 Traverwood Drive |
| Ann Arbor, MI 48105 |

Please consider the environment before printing this email.





Message

From: Swain, David [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=19721755371B4F7382EC6A0AEBC0BC9A-SWAIN, DAVID]
Sent: 11/16/2018 11:48:31 PM
To: HORTON JOHN [HORTON.JOHN@mahindra.com]; MARTINS HENRIQUE [MARTINS.HENRIQUE@mahindra.com]
CC: Green, Donzell [green.donzell@epa.gov]; FAHY JAMES [FAHY.JAMES@mahindra.com]
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Thank-you Mr. Horton,
Is it possible you and/or Henrique can please share the PM data again?
I can't locate it.

Thanks,
-Dave Swain

From: HORTON JOHN <HORTON.JOHN@mahindra.com>
Sent: Friday, November 16, 2018 7:41 AM
To: Swain, David <swain.david@epa.gov>; MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Cc: Green, Donzell <green.donzell@epa.gov>; FAHY JAMES <FAHY.JAMES@mahindra.com>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

David,

Henrique is on vacation so I will answer in his stead.

Ex. 4 CBI

The vehicle is ready to ship.

Regards,

John Horton
Sr. Emissions Compliance Engineer
Office of Technical and Regulatory Affairs
Mahindra North American Technical Center
275 Rex Blvd Auburn Hills, MI 48326, USA
Email: horton.john@mahindra.com
Ex. 6 Personal Privacy (PP)

Mahindra
Rise.

From: Swain, David <swain.david@epa.gov>
Sent: Thursday, November 15, 2018 6:22 PM
To: MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Cc: Green, Donzell <green.donzell@epa.gov>; HORTON JOHN <HORTON.JOHN@mahindra.com>; FAHY JAMES <FAHY.JAMES@mahindra.com>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Thank-you Henrique.
I did not ask for you to test it, but I was very interested in any results you have. Rather than make an estimate for which of our test cells is most appropriate to use to test it, your results will help guide me, so I appreciate it.

Also, did you take any particulate measurements or N2O measurements?

We are nearly ready to receive it. I will know more Monday, if it is ok to ship.

Thank-you,
-David Swain

From: MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Sent: Wednesday, November 14, 2018 2:26 PM
To: Swain, David <swain.david@epa.gov>
Cc: Green, Donzell <green.donzell@epa.gov>; HORTON JOHN <HORTON.JOHN@mahindra.com>; FAHY JAMES <FAHY.JAMES@mahindra.com>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Dear David,
As per your request, Ex. 4 CBI to performed Emissions testing yesterday. The test was executed by Ex. 4 CBI without the presence of MNATC, Inc. personnel.
The results are compliant and consistent with other testing (please find the testing results attached to this email).
The vehicle custody form needs to be updated to reflect this additional activity (the emissions testing), please let me know if I can send you the updated form by email.
Please let me also know a date that is convenient to ship the vehicle to the EPA laboratory.

Thanks and kind regards,

Henrique R. Martins

Sr Manager
Technical and Regulatory Affairs
Certification, Homologation, and Compliance
Mahindra Automotive North American Technical Center
275 Rex Blvd
Auburn Hills, MI 48326
(248) 268-6600

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Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Dear David,
Thank you for the quick response.
I will contact Ex. 4 CBI and inquire about their availability and then inform you whether we will need extension on the required delivery date.

Thanks and kind regards,

Henrique R. Martins

Sr Manager
Technical and Regulatory Affairs
Certification, Homologation, and Compliance
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Cc: Green, Donzell <green.donzell@epa.gov>; HORTON JOHN <HORTON.JOHN@mahindra.com>; FAHY JAMES <FAHY.JAMES@mahindra.com>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

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I am interested in comparing your results with ours, because we do not normally test vehicles that do not have traps. But if Ex. 4 CBI does not have available testing within the next week, I understand. Upon request, we can extend any required delivery date if the reason is that you need to wait for a testing slot to become available.

-Dave

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Sent: Friday, November 09, 2018 3:54 PM
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Cc: Green, Donzell <green.donzell@epa.gov>; HORTON JOHN <HORTON.JOHN@mahindra.com>; FAHY JAMES <FAHY.JAMES@mahindra.com>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

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Also, please let us know a date that is more convenient for EPA for the shipment.

Meanwhile I will communicate our logistics team to cancel the shipment on Nov 12, 2018 and wait for your direction.

Thanks and kind regards,

Henrique R. Martins

Sr Manager
Technical and Regulatory Affairs
Certification, Homologation, and Compliance
Mahindra Automotive North American Technical Center
275 Rex Blvd
Auburn Hills, MI 48326
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Sent: Friday, November 9, 2018 2:25 PM
To: MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Cc: Green, Donzell <green.donzell@epa.gov>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

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Have you tested it?

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Sent: Friday, November 09, 2018 11:37 AM
To: Swain, David <swain.david@epa.gov>
Cc: Green, Donzell <green.donzell@epa.gov>; Hoban, John <Hoban.John@epa.gov>; HORTON JOHN <HORTON.JOHN@mahindra.com>; FAHY JAMES <FAHY.JAMES@mahindra.com>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Dear David,
This email is to inform you that the Service Accumulation is now complete.
I went to Ex. 4 CBI yesterday to review and sign the forms listed in attachments 1,2 and 3 of the Test Order letter sent by EPA.
A binder containing all the forms (as all as other required documents like Operator's Guide) in inside the storage compartment located under the driver seat.
The storage compartment is locked (keys are on the same key holder as the ignition keys) and the binder is wrapped in a plastic bag.

We are taking care of the arrangements to ship the vehicle to the EPA test laboratory. Shipment is planned for Nov 12, 2018.
Our shipping request has the contact information supplied in the Test Order letter sent by EPA.
Please let me know if this date is convenient to EPA or if you would suggest another date.
Also, please let us know should you have additional instructions for the delivery.

I will fill attachment 4 with the list of representatives to witness the test vehicle set-up as soon as EPA confirms the test date.

Thanks and kind regards,

Henrique R. Martins

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Technical and Regulatory Affairs
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To: 'Swain, David' <swain.david@epa.gov>
Cc: 'Green, Donzell' <green.donzell@epa.gov>; 'Hoban, John' <Hoban.John@epa.gov>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Dear David,

So far, based on the information we have from Ex. 4 CBI, we do not believe we will need extension on the test order. When the vehicle is ready to ship from Ex. 4 CBI we will notify you (and cc Donzell Green and John Hoban as per your request).

Thanks and kind regards,

Henrique R. Martins

Sr Manager
Technical and Regulatory Affairs
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Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Mr. Martins,

If Mahindra would like EPA to extend the test order delivery date to NVFEL, we can do this informally via email. Please email me the request, and please make sure to keep Donzell Green and John Hoban in the cc.

Please do not contact John Hoban. Please only keep him in the cc of all correspondence until further notice.

Thank-you,
-David Swain

From: MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Sent: Friday, November 02, 2018 10:34 AM
To: Swain, David <swain.david@epa.gov>; Green, Donzell <green.donzell@epa.gov>; Jackson, Cleophas <jackson.cleophas@epa.gov>
Cc: Ex. 4 CBI HORTON JOHN <HORTON.JOHN@mahindra.com>; FAHY JAMES <FAHY.JAMES@mahindra.com>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Dear David,
Based on an email we recently received from Ex. 4 CBI is planning on maintenance of their Emissions benches until November 12, 2018 Ex. 4 CBI could you please confirm?).
Please let us know your decision regarding the test location and we will make sure to supply the vehicle at the date and place required by EPA.

Thanks and kind regards,

Henrique R. Martins

Sr Manager
Technical and Regulatory Affairs
Certification, Homologation, and Compliance
Mahindra Automotive North American Technical Center
275 Rex Blvd
Auburn Hills, MI 48326
(248) 268-6600

From: Swain, David <swain.david@epa.gov>
Sent: Thursday, November 1, 2018 12:25 PM
To: MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Cc: Ex. 4 CBI Green, Donzell <green.donzell@epa.gov>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Mr. Martins,
Please reply-all. Will Ex. 4 CBI be able to perform an emissions test?
Thank-you,
-David Swain

From: MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Sent: Wednesday, October 31, 2018 10:52 AM
To: Jackson, Cleophas <jackson.cleophas@epa.gov>; Swain, David <swain.david@epa.gov>; Green, Donzell <green.donzell@epa.gov>

Cc: HORTON JOHN <HORTON.JOHN@mahindra.com>; FAHY JAMES <FAHY.JAMES@mahindra.com>
Subject: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Dear All,

This note is to inform you that the ROXOR vehicle selected by EPA for Compliance testing was shipped to Ex. 4 CBI yesterday. According to Ex. 4 CBI personnel, service accumulation will be initiated today and should be completed by sometime tomorrow.

The contacts of the Ex. 4 CBI personnel managing the service accumulation are:

Ex. 4 CBI

Please let me know the date the test will be scheduled and confirm the test location, so I can fill out the "Statement of Manufacturer Intent to Witness Test Vehicle Set-up" form.
Also, I wanted to let you know the communication I received regarding this test order (Test Order 18-ATVB-PE-68) only contains attachment 1, 3 and 4.
Please let me know in case you also require attachment 2 to be filled and submitted.
Finally, please send me the document you referred during our meeting as "Blue Sheet" so I can fill it out and submit to you.

Thanks and kind regards,

Henrique R. Martins

Sr Manager
Technical and Regulatory Affairs
Certification, Homologation, and Compliance
Mahindra Automotive North American Technical Center
275 Rex Blvd
Auburn Hills, MI 48326
(248) 268-6600

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immediately and delete it from your system. The views expressed in this E-mail message (including the enclosure/(s) or attachment/(s) if any) are those of the individual sender. ----------

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Message

From: Swain, David [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=19721755371B4F7382EC6A0AEBC0BC9A-SWAIN, DAVID]
Sent: 12/3/2018 8:51:48 PM
To: MARTINS HENRIQUE [MARTINS.HENRIQUE@mahindra.com]
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019 - TEST DATE

Is it possible to get type approval for the US vehicle to be operated on streets or highways in India?

From: MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Sent: Monday, December 03, 2018 11:05 AM
To: Swain, David <swain.david@epa.gov>; Green, Donzell <green.donzell@epa.gov>
Cc: Fredryk, John <fredryk.john@epa.gov>; FAHY JAMES <FAHY.JAMES@mahindra.com>; HORTON JOHN <HORTON.JOHN@mahindra.com>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019 - TEST DATE

Dear David,

Thank you for confirming receipt of the vehicle.

Please let me know the test date, so I can fill attachment 4 with the list of representatives to witness the test vehicle set-up.

Thanks and kind regards,

Henrique R. Martins

Sr Manager
Technical and Regulatory Affairs
Certification, Homologation, and Compliance
Mahindra Automotive North American Technical Center
275 Rex Blvd
Auburn Hills, MI 48326
(248) 268-6600

From: Swain, David <swain.david@epa.gov>
Sent: Thursday, November 29, 2018 3:34 PM
To: MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Cc: Green, Donzell <green.donzell@epa.gov>; Fredryk, John <fredryk.john@epa.gov>; FAHY JAMES <FAHY.JAMES@mahindra.com>; HORTON JOHN <HORTON.JOHN@mahindra.com>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019 - VEHICLE DELIVERED AT EPA

Mr. Martins,

This is to confirm that we received the vehicle today.
Thank-you,
-David Swain

From: MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Sent: Thursday, November 29, 2018 3:28 PM
To: Swain, David <swain.david@epa.gov>
Cc: Green, Donzell <green.donzell@epa.gov>; Fredryk, John <fredryk.john@epa.gov>; FAHY JAMES <FAHY.JAMES@mahindra.com>; HORTON JOHN <HORTON.JOHN@mahindra.com>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019 - VEHICLE DELIVERED AT EPA

Dear David,

This email is to inform you that the vehicle was delivered at the EPA laboratory in Ann Arbor today (around 11am).

Please let me know the test date, so I can fill attachment 4 with the list of representatives to witness the test vehicle set-up.

Also, find attached to this email:

- the updated vehicle custody form
- A word document containing work instructions to drain the fuel tank
- Engine and gear oil (transfer case, differential, manual trans) Safety Data Sheets

Should you have any questions, please do not hesitate to contact me.

Thanks and kind regards,

Henrique R. Martins

Sr Manager
Technical and Regulatory Affairs
Certification, Homologation, and Compliance
Mahindra Automotive North American Technical Center
275 Rex Blvd
Auburn Hills, MI 48326
(248) 268-6600

From: MARTINS HENRIQUE
Sent: Monday, November 26, 2018 2:58 PM
To: 'Swain, David' <swain.david@epa.gov>
Cc: Green, Donzell <green.donzell@epa.gov>; 'fredryk.john@epa.gov' <fredryk.john@epa.gov>; HORTON JOHN <HORTON.JOHN@mahindra.com>; FAHY JAMES <FAHY.JAMES@mahindra.com>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Dear David Swain,

I hope you have enjoyed a wonderful Thanksgiving.

I would like to inform that our Logistics department has booked to pick up the vehicle most likely today with delivery tomorrow, but with the weather situation it could possibly be Wed AM at the latest for delivery.
They have gave the carrier John Fredryk's info for delivery as stated in the "Test Order #18-ATV-PE-68" notification letter.

I will send you an electronic version of the service manual in a separate email.

Thanks and kind regards,

Henrique R. Martins

Sr Manager
Technical and Regulatory Affairs
Certification, Homologation, and Compliance
Mahindra Automotive North American Technical Center
275 Rex Blvd
Auburn Hills, MI 48326
(248) 268-6600

From: Swain, David <swain.david@epa.gov>
Sent: Wednesday, November 21, 2018 4:15 PM
To: MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Cc: Green, Donzell <green.donzell@epa.gov>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Do you also have the service manual in electronic format?

From: MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Sent: Wednesday, November 21, 2018 4:12 PM
To: Swain, David <swain.david@epa.gov>
Cc: Green, Donzell <green.donzell@epa.gov>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Dear David,
As requested, please find attached an electronic version of the Operators Guide containing Maintenance Procedures.
I have issue a request to my logistic department to ship the vehicle from Ex. 4 CBI to the EPA lab, I will let you know as soon as I receive confirmation of the shipment date.

Thanks and kind regards,

Henrique R. Martins

Sr Manager
Technical and Regulatory Affairs
Certification, Homologation, and Compliance
Mahindra Automotive North American Technical Center
275 Rex Blvd

Auburn Hills, MI 48326
(248) 268-6600
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From: Swain, David <swain.david@epa.gov>
Sent: Wednesday, November 21, 2018 12:40 PM
To: MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Cc: Green, Donzell <green.donzell@epa.gov>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Also, do you have an electronic version of the service manual that you can mail Donzell and me?

Thank !
-Dave

From: MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Sent: Tuesday, November 20, 2018 3:37 PM
To: Swain, David <swain.david@epa.gov>
Cc: Green, Donzell <green.donzell@epa.gov>; FAHY JAMES <FAHY.JAMES@mahindra.com>; HORTON JOHN <HORTON.JOHN@mahindra.com>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Dear David,
Find attached the driver's trace for the test performed at Ex. 4 CBI earlier this year.

Please let us know a date that is convenient to ship the vehicle to the EPA laboratory.

Thanks and kind regards,

Henrique R. Martins

Sr Manager
Technical and Regulatory Affairs
Certification, Homologation, and Compliance
Mahindra Automotive North American Technical Center
275 Rex Blvd
Auburn Hills, MI 48326
(248) 268-6600
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From: Swain, David <swain.david@epa.gov>
Sent: Monday, November 19, 2018 7:01 PM
To: HORTON JOHN <HORTON.JOHN@mahindra.com>; MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Cc: Green, Donzell <green.donzell@epa.gov>; FAHY JAMES <FAHY.JAMES@mahindra.com>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Thank-you ! Do you have the driver's trace too?

From: HORTON JOHN <HORTON.JOHN@mahindra.com>
Sent: Friday, November 16, 2018 7:15 PM
To: Swain, David <swain.david@epa.gov>; MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>

Cc: Green, Donzell <green.donzell@epa.gov>; FAHY JAMES <FAHY.JAMES@mahindra.com>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

David,

Per your request.
These results were from a development test at another facility Ex. 4 CBI earlier this year.

Total Result (weighted)

Weighted	THC[g/mile]	CO[g/mile]	CO_2[g/mile]	NO_x[g/mile]	CH_4[g/mile]	N_2O[g/mile]	NMHC[g/mile]	HC+NO_x[g/mile]	***Fuel Economy***
Mass per Dist.	Ex. 4 CBI								
Mass per Dist. (rounded)									
Mass per Dist. (rounded) per km									
	STD FED 35.0					**STD=1.5 FED**			

Particulate Result

		Bag 1	Bag 2	Bag 3	Bag 4
Filter ID		Ex. 4 CBI			
Particulate Sample Mass	mg				
Mass Corr Factor	%				
Mass of Particulate Emission	g				
Specific Particulate Emission (BG Corr)					
Weighted Specific Particulate Emissions					

From: Swain, David <swain.david@epa.gov>
Sent: Friday, November 16, 2018 6:49 PM
To: HORTON JOHN <HORTON.JOHN@mahindra.com>; MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Cc: Green, Donzell <green.donzell@epa.gov>; FAHY JAMES <FAHY.JAMES@mahindra.com>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Thank-you Mr. Horton,
Is it possible you and/or Henrique can please share the PM data again?

I can't locate it.

Thanks,
-Dave Swain

From: HORTON JOHN <HORTON.JOHN@mahindra.com>
Sent: Friday, November 16, 2018 7:41 AM
To: Swain, David <swain.david@epa.gov>; MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Cc: Green, Donzell <green.donzell@epa.gov>; FAHY JAMES <FAHY.JAMES@mahindra.com>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

David,

Henrique is on vacation so I will answer in his stead.

Ex. 4 CBI

The vehicle is ready to ship.

Regards,

John Horton
Sr. Emissions Compliance Engineer
Office of Technical and Regulatory Affairs
Mahindra North American Technical Center
275 Rex Blvd Auburn Hills, MI 48326, USA
Email: horton.john@mahindra.com
Ex. 6 Personal Privacy (PP)
<< OLE Object: Picture (Device Independent Bitmap) >>

From: Swain, David <swain.david@epa.gov>
Sent: Thursday, November 15, 2018 6:22 PM
To: MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Cc: Green, Donzell <green.donzell@epa.gov>; HORTON JOHN <HORTON.JOHN@mahindra.com>; FAHY JAMES <FAHY.JAMES@mahindra.com>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Thank-you Henrique.
I did not ask for you to test it, but I was very interested in any results you have. Rather than make an estimate for which of our test cells is most appropriate to use to test it, your results will help guide me, so I appreciate it.

Also, did you take any particulate measurements or N2O measurements?

We are nearly ready to receive it. I will know more Monday, if it is ok to ship.

Thank-you,
-David Swain

From: MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Sent: Wednesday, November 14, 2018 2:26 PM
To: Swain, David <swain.david@epa.gov>
Cc: Green, Donzell <green.donzell@epa.gov>; HORTON JOHN <HORTON.JOHN@mahindra.com>; FAHY JAMES <FAHY.JAMES@mahindra.com>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Dear David,
As per your request, Ex. 4 CBI to performed Emissions testing yesterday. The test was executed by Ex. 4 CBI without the presence of MNATC, Inc. personnel.
The results are compliant and consistent with other testing (please find the testing results attached to this email).
The vehicle custody form needs to be updated to reflect this additional activity (the emissions testing), please let me know if I can send you the updated form by email.
Please let me also know a date that is convenient to ship the vehicle to the EPA laboratory.

Thanks and kind regards,

Henrique R. Martins

Sr Manager
Technical and Regulatory Affairs
Certification, Homologation, and Compliance
Mahindra Automotive North American Technical Center
275 Rex Blvd
Auburn Hills, MI 48326
(248) 268-6600
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From: MARTINS HENRIQUE
Sent: Friday, November 9, 2018 4:06 PM
To: Swain, David <swain.david@epa.gov>
Cc: Green, Donzell <green.donzell@epa.gov>; HORTON JOHN <HORTON.JOHN@mahindra.com>; FAHY JAMES <FAHY.JAMES@mahindra.com>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Dear David,
Thank you for the quick response.
I will contact Ex. 4 CBI and inquire about their availability and then inform you whether we will need extension on the required delivery date.

Thanks and kind regards,

Henrique R. Martins

Sr Manager
Technical and Regulatory Affairs
Certification, Homologation, and Compliance
Mahindra Automotive North American Technical Center
275 Rex Blvd
Auburn Hills, MI 48326
(248) 268-6600
<< OLE Object: Picture (Device Independent Bitmap) >>

From: Swain, David <swain.david@epa.gov>
Sent: Friday, November 9, 2018 4:01 PM
To: MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Cc: Green, Donzell <green.donzell@epa.gov>; HORTON JOHN <HORTON.JOHN@mahindra.com>; FAHY JAMES <FAHY.JAMES@mahindra.com>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Hi Henrique,
I am interested in comparing your results with ours, because we do not normally test vehicles that do not have traps. But if Ex. 4 CBI does not have available testing within the next week, I understand. Upon request, we can extend any required delivery date if the reason is that you need to wait for a testing slot to become available.

-Dave

From: MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Sent: Friday, November 09, 2018 3:54 PM
To: Swain, David <swain.david@epa.gov>
Cc: Green, Donzell <green.donzell@epa.gov>; HORTON JOHN <HORTON.JOHN@mahindra.com>; FAHY JAMES <FAHY.JAMES@mahindra.com>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Dear David,
We have only requested Ex. 4 CBI to carry-out service accumulation as instructed in the Test Order 18-ATVB-PE-68.
Please inform us if EPA wants any additional preparations that were not listed in the Test Order 18-ATVB-PE-68 to be performed prior to delivery.
Also, please let us know a date that is more convenient for EPA for the shipment.

Meanwhile I will communicate our logistics team to cancel the shipment on Nov 12, 2018 and wait for your direction.

Thanks and kind regards,
Henrique R. Martins

Sr Manager
Technical and Regulatory Affairs
Certification, Homologation, and Compliance
Mahindra Automotive North American Technical Center
275 Rex Blvd
Auburn Hills, MI 48326

(248) 268-6600
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From: Swain, David <swain.david@epa.gov>
Sent: Friday, November 9, 2018 2:25 PM
To: MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Cc: Green, Donzell <green.donzell@epa.gov>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Please do not ship it yet.
Have you tested it?

From: MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Sent: Friday, November 09, 2018 11:37 AM
To: Swain, David <swain.david@epa.gov>
Cc: Green, Donzell <green.donzell@epa.gov>; Hoban, John <Hoban.John@epa.gov>; HORTON JOHN <HORTON.JOHN@mahindra.com>; FAHY JAMES <FAHY.JAMES@mahindra.com>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Dear David,
This email is to inform you that the Service Accumulation is now complete.
I went to Ex. 4 CBI yesterday to review and sign the forms listed in attachments 1,2 and 3 of the Test Order letter sent by EPA.
A binder containing all the forms (as all as other required documents like Operator's Guide) in inside the storage compartment located under the driver seat.
The storage compartment is locked (keys are on the same key holder as the ignition keys) and the binder is wrapped in a plastic bag.

We are taking care of the arrangements to ship the vehicle to the EPA test laboratory. Shipment is planned for Nov 12, 2018.
Our shipping request has the contact information supplied in the Test Order letter sent by EPA.
Please let me know if this date is convenient to EPA or if you would suggest another date.
Also, please let us know should you have additional instructions for the delivery.

I will fill attachment 4 with the list of representatives to witness the test vehicle set-up as soon as EPA confirms the test date.

Thanks and kind regards,
Henrique R. Martins

Sr Manager
Technical and Regulatory Affairs
Certification, Homologation, and Compliance
Mahindra Automotive North American Technical Center
275 Rex Blvd
Auburn Hills, MI 48326
(248) 268-6600
<< OLE Object: Picture (Device Independent Bitmap) >>

From: MARTINS HENRIQUE
Sent: Friday, November 2, 2018 3:22 PM
To: 'Swain, David' <swain.david@epa.gov>

Cc: 'Green, Donzell' <green.donzell@epa.gov>; 'Hoban, John' <Hoban.John@epa.gov>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Dear David,

So far, based on the information we have from Ex. 4 CBI we do not believe we will need extension on the test order. When the vehicle is ready to ship from Ex. 4 CBI we will notify you (and cc Donzell Green and John Hoban as per your request).

Thanks and kind regards,

Henrique R. Martins

Sr Manager
Technical and Regulatory Affairs
Certification, Homologation, and Compliance
Mahindra Automotive North American Technical Center
275 Rex Blvd
Auburn Hills, MI 48326
(248) 268-6600
<< OLE Object: Picture (Device Independent Bitmap) >>

From: Swain, David <swain.david@epa.gov>
Sent: Friday, November 2, 2018 11:03 AM
To: MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Cc: Ex. 4 CBI HORTON JOHN <HORTON.JOHN@mahindra.com>; FAHY JAMES <FAHY.JAMES@mahindra.com>; Green, Donzell <green.donzell@epa.gov>; Hoban, John <Hoban.John@epa.gov>; Chen, Emily <Chen.Emily@epa.gov>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Mr. Martins,
If Mahindra would like EPA to extend the test order delivery date to NVFEL, we can do this informally via email. Please email me the request, and please make sure to keep Donzell Green and John Hoban in the cc.

Please do not contact John Hoban. Please only keep him in the cc of all correspondence until further notice.

Thank-you,
-David Swain

From: MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Sent: Friday, November 02, 2018 10:34 AM
To: Swain, David <swain.david@epa.gov>; Green, Donzell <green.donzell@epa.gov>; Jackson, Cleophas <jackson.cleophas@epa.gov>
Cc: Ex. 4 CBI HORTON JOHN <HORTON.JOHN@mahindra.com>; FAHY JAMES <FAHY.JAMES@mahindra.com>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Dear David,
Based on an email we recently received from Ex. 4 CBI is planning on maintenance of their Emissions benches until November 12, 2018 (Ex. 4 CBI , could you please confirm?).
Please let us know your decision regarding the test location and we will make sure to supply the vehicle at the date and place required by EPA.

Thanks and kind regards,

Henrique R. Martins

Sr Manager
Technical and Regulatory Affairs
Certification, Homologation, and Compliance
Mahindra Automotive North American Technical Center
275 Rex Blvd
Auburn Hills, MI 48326
(248) 268-6600
<< OLE Object: Picture (Device Independent Bitmap) >>

From: Swain, David <swain.david@epa.gov>
Sent: Thursday, November 1, 2018 12:25 PM
To: MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Cc: Ex. 4 CBI Green, Donzell <green.donzell@epa.gov>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Mr. Martins,
Please reply-all. Will Ex. 4 CBI be able to perform an emissions test?
Thank-you,
-David Swain

From: MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Sent: Wednesday, October 31, 2018 10:52 AM
To: Jackson, Cleophas <jackson.cleophas@epa.gov>; Swain, David <swain.david@epa.gov>; Green, Donzell <green.donzell@epa.gov>
Cc: HORTON JOHN <HORTON.JOHN@mahindra.com>; FAHY JAMES <FAHY.JAMES@mahindra.com>
Subject: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Dear All,

This note is to inform you that the ROXOR vehicle selected by EPA for Compliance testing was shipped to Ex. 4 CBI yesterday. According to Ex. 4 CBI personnel, service accumulation will be initiated today and should be completed by sometime tomorrow.

The contacts of the Ex. 4 CBI personnel managing the service accumulation are:

Ex. 4 CBI

Ex. 4 CBI

Please let me know the date the test will be scheduled and confirm the test location, so I can fill out the "Statement of Manufacturer Intent to Witness Test Vehicle Set-up" form.
Also, I wanted to let you know the communication I received regarding this test order (Test Order 18-ATVB-PE-68) only contains attachment 1, 3 and 4.
Please let me know in case you also require attachment 2 to be filled and submitted.
Finally, please send me the document you referred during our meeting as "Blue Sheet" so I can fill it out and submit to you.

Thanks and kind regards,

Henrique R. Martins

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Auburn Hills, MI 48326
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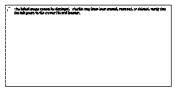

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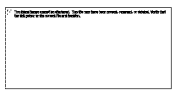

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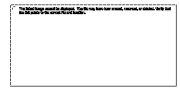

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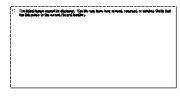

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Message

From: Swain, David [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=19721755371B4F7382EC6A0AEBC0BC9A-SWAIN, DAVID]
Sent: 11/9/2018 9:00:51 PM
To: MARTINS HENRIQUE [MARTINS.HENRIQUE@mahindra.com]
CC: Green, Donzell [green.donzell@epa.gov]; HORTON JOHN [HORTON.JOHN@mahindra.com]; FAHY JAMES [FAHY.JAMES@mahindra.com]
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Hi Henrique,
I am interested in comparing your results with ours, because we do not normally test vehicles that do not have traps. But if Ex. 4 CBI does not have available testing within the next week, I understand. Upon request, we can extend any required delivery date if the reason is that you need to wait for a testing slot to become available.

-Dave

From: MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Sent: Friday, November 09, 2018 3:54 PM
To: Swain, David <swain.david@epa.gov>
Cc: Green, Donzell <green.donzell@epa.gov>; HORTON JOHN <HORTON.JOHN@mahindra.com>; FAHY JAMES <FAHY.JAMES@mahindra.com>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Dear David,
We have only requested Ex. 4 CBI o carry-out service accumulation as instructed in the Test Order 18-ATVB-PE-68.
Please inform us if EPA wants any additional preparations that were not listed in the Test Order 18-ATVB-PE-68 to be performed prior to delivery.
Also, please let us know a date that is more convenient for EPA for the shipment.

Meanwhile I will communicate our logistics team to cancel the shipment on Nov 12, 2018 and wait for your direction.

Thanks and kind regards,

Henrique R. Martins

Sr Manager
Technical and Regulatory Affairs
Certification, Homologation, and Compliance
Mahindra Automotive North American Technical Center
275 Rex Blvd
Auburn Hills, MI 48326
(248) 268-6600

From: Swain, David <swain.david@epa.gov>
Sent: Friday, November 9, 2018 2:25 PM
To: MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Cc: Green, Donzell <green.donzell@epa.gov>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Please do not ship it yet.

Have you tested it?

From: MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Sent: Friday, November 09, 2018 11:37 AM
To: Swain, David <swain.david@epa.gov>
Cc: Green, Donzell <green.donzell@epa.gov>; Hoban, John <Hoban.John@epa.gov>; HORTON JOHN <HORTON.JOHN@mahindra.com>; FAHY JAMES <FAHY.JAMES@mahindra.com>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Dear David,
This email is to inform you that the Service Accumulation is now complete.
I went to Ex. 4 CBI yesterday to review and sign the forms listed in attachments 1,2 and 3 of the Test Order letter sent by EPA.
A binder containing all the forms (as all as other required documents like Operator's Guide) in inside the storage compartment located under the driver seat.
The storage compartment is locked (keys are on the same key holder as the ignition keys) and the binder is wrapped in a plastic bag.

We are taking care of the arrangements to ship the vehicle to the EPA test laboratory. Shipment is planned for Nov 12, 2018.
Our shipping request has the contact information supplied in the Test Order letter sent by EPA.
Please let me know if this date is convenient to EPA or if you would suggest another date.
Also, please let us know should you have additional instructions for the delivery.

I will fill attachment 4 with the list of representatives to witness the test vehicle set-up as soon as EPA confirms the test date.

Thanks and kind regards,

Henrique R. Martins

Sr Manager
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Mahindra Automotive North American Technical Center
275 Rex Blvd
Auburn Hills, MI 48326
(248) 268-6600

From: MARTINS HENRIQUE
Sent: Friday, November 2, 2018 3:22 PM
To: 'Swain, David' <swain.david@epa.gov>
Cc: 'Green, Donzell' <green.donzell@epa.gov>; 'Hoban, John' <Hoban.John@epa.gov>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Dear David,

So far, based on the information we have from Ex. 4 CBI we do not believe we will need extension on the test order.
When the vehicle is ready to ship from Ex. 4 CBI we will notify you (and cc Donzell Green and John Hoban as per your request).

Thanks and kind regards,

Henrique R. Martins

Sr Manager
Technical and Regulatory Affairs
Certification, Homologation, and Compliance
Mahindra Automotive North American Technical Center
275 Rex Blvd
Auburn Hills, MI 48326
(248) 268-6600

From: Swain, David <swain.david@epa.gov>
Sent: Friday, November 2, 2018 11:03 AM
To: MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Cc Ex. 4 CBI HORTON JOHN <HORTON.JOHN@mahindra.com>; FAHY JAMES <FAHY.JAMES@mahindra.com>; Green, Donzell <green.donzell@epa.gov>; Hoban, John <Hoban.John@epa.gov>; Chen, Emily <Chen.Emily@epa.gov>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Mr. Martins,
If Mahindra would like EPA to extend the test order delivery date to NVFEL, we can do this informally via email. Please email me the request, and please make sure to keep Donzell Green and John Hoban in the cc.

Please do not contact John Hoban. Please only keep him in the cc of all correspondence until further notice.

Thank-you,
-David Swain

From: MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Sent: Friday, November 02, 2018 10:34 AM
To: Swain, David <swain.david@epa.gov>; Green, Donzell <green.donzell@epa.gov>; Jackson, Cleophas <jackson.cleophas@epa.gov>
Cc Ex. 4 CBI HORTON JOHN <HORTON.JOHN@mahindra.com>; FAHY JAMES <FAHY.JAMES@mahindra.com>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Dear David,
Based on an email we recently received from Ex. 4 CBI planning on maintenance of their Emissions benches until November 12, 2018 Ex. 4 CBI could you please confirm?).
Please let us know your decision regarding the test location and we will make sure to supply the vehicle at the date and place required by EPA.

Thanks and kind regards,

Henrique R. Martins

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From: Swain, David <swain.david@epa.gov>
Sent: Thursday, November 1, 2018 12:25 PM
To: MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Cc: Ex. 4 CBI Green, Donzell <green.donzell@epa.gov>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Mr. Martins,
Please reply-all. Will Ex. 4 CBI be able to perform an emissions test?
Thank-you,
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From: MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Sent: Wednesday, October 31, 2018 10:52 AM
To: Jackson, Cleophas <jackson.cleophas@epa.gov>; Swain, David <swain.david@epa.gov>; Green, Donzell <green.donzell@epa.gov>
Cc: HORTON JOHN <HORTON.JOHN@mahindra.com>; FAHY JAMES <FAHY.JAMES@mahindra.com>
Subject: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Dear All,

This note is to inform you that the ROXOR vehicle selected by EPA for Compliance testing was shipped to Ex. 4 CBI yesterday. According to Ex. 4 CBI personnel, service accumulation will be initiated today and should be completed by sometime tomorrow.

The contacts of the Ex. 4 CBI personnel managing the service accumulation are:

Ex. 4 CBI

Please let me know the date the test will be scheduled and confirm the test location, so I can fill out the "Statement of Manufacturer Intent to Witness Test Vehicle Set-up" form.
Also, I wanted to let you know the communication I received regarding this test order (Test Order 18-ATVB-PE-68) only contains attachment 1, 3 and 4.
Please let me know in case you also require attachment 2 to be filled and submitted.
Finally, please send me the document you referred during our meeting as "Blue Sheet" so I can fill it out and submit to you.

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To: MARTINS HENRIQUE [MARTINS.HENRIQUE@mahindra.com]
CC: Green, Donzell [green.donzell@epa.gov]
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To: Jackson, Cleophas <jackson.cleophas@epa.gov>; Swain, David <swain.david@epa.gov>; Green, Donzell <green.donzell@epa.gov>
Cc: HORTON JOHN <HORTON.JOHN@mahindra.com>; FAHY JAMES <FAHY.JAMES@mahindra.com>
Subject: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Dear All,

This note is to inform you that the ROXOR vehicle selected by EPA for Compliance testing was shipped to Ex. 4 CBI yesterday. According to Ex. 4 CBI personnel, service accumulation will be initiated today and should be completed by sometime tomorrow.

The contacts of the Ex. 4 CBI personnel managing the service accumulation are:

Ex. 4 CBI

Ex. 4 CBI

Please let me know the date the test will be scheduled and confirm the test location, so I can fill out the "Statement of Manufacturer Intent to Witness Test Vehicle Set-up" form.
Also, I wanted to let you know the communication I received regarding this test order (Test Order 18-ATVB-PE-68) only contains attachment 1, 3 and 4.
Please let me know in case you also require attachment 2 to be filled and submitted.
Finally, please send me the document you referred during our meeting as "Blue Sheet" so I can fill it out and submit to you.

Thanks and kind regards,

Henrique R. Martins

Sr Manager
Technical and Regulatory Affairs
Certification, Homologation, and Compliance
Mahindra Automotive North American Technical Center
275 Rex Blvd
Auburn Hills, MI 48326
(248) 268-6600

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Message

From: Green, Donzell [green.donzell@epa.gov]
Sent: 11/1/2018 2:30:59 PM
To: Swain, David [swain.david@epa.gov]
Subject: Recreational Vehicle Production Test Order 18-ATVB-PE-68-Mahindra Automotive North American Technical Center Inc. -EF-LMNCX2.52DMI-KMNCX2.52DMI
Attachments: Recreational Vehicle Production Test Order 18-ATVB-PE-68-Mahindra Automotive North American Technical C....pdf; RV Test Vehicle Information Form (Blue Sheet-Rev04).xlsx

Hello David,
The Mahindra test order and blueis attached.
Thanks,

Donzell Green
734-214-4323
Senior Environmental Employment (SEE)
Cooperative with the Compliance Division
USEPA

Message

From: Swain, David [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=19721755371B4F7382EC6A0AEBC0BC9A-SWAIN, DAVID]
Sent: 12/6/2018 2:33:23 PM
To: Green, Donzell [green.donzell@epa.gov]
CC: MARTINS HENRIQUE [MARTINS.HENRIQUE@mahindra.com]; Hoban, John [Hoban.John@epa.gov]; Ex. 6 Personal Privacy (PP)
Subject: RE: Recreational Vehicle Production Test Order 18-ATVB-PE-68-Mahindra Automotive North American Technical Center Inc. -EF-LMNCX2.52DMI-KMNCX2.52DMI
Attachments: RV Test Vehicle Information Form (Blue Sheet-Rev04).xlsx; Recreational Vehicle Production Test Order 18-ATVB-PE-68-Mahindra Automotive North American Technical C....pdf

Hi Henrique,
Please reply-all with a filled-out blue sheet today ASAP.
Thank-you,
-David Swain

Message

From: Swain, David [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=19721755371B4F7382EC6A0AEBC0BC9A-SWAIN, DAVID]
Sent: 11/1/2018 4:15:38 PM
To: Green, Donzell [green.donzell@epa.gov]
Subject: FW: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019
Attachments: RV Test Vehicle Information Form (Blue Sheet-Rev04).xlsx; Recreational Vehicle Production Test Order 18-ATVB-PE-68-Mahindra Automotive North American Technical C....pdf

Ex. 5 Deliberative Process (DP)

From: Swain, David
Sent: Thursday, November 01, 2018 12:11 PM
To: 'MARTINS HENRIQUE' <MARTINS.HENRIQUE@mahindra.com>
Cc: HORTON JOHN <HORTON.JOHN@mahindra.com>; FAHY JAMES <FAHY.JAMES@mahindra.com>; Green, Donzell <green.donzell@epa.gov>; Jackson, Cleophas <jackson.cleophas@epa.gov>; Chen, Emily <chen.emily@epa.gov>; Hoban, John <Hoban.John@epa.gov>; 'robertdspecht@att.net' <robertdspecht@att.net>
Subject: RE: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Thank-you Mr. Martins,
Please see the attached updated test order and Blue sheet.
Please reply-all with the projected ship date.

Thank-you,
-David

From: MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Sent: Wednesday, October 31, 2018 10:52 AM
To: Jackson, Cleophas <jackson.cleophas@epa.gov>; Swain, David <swain.david@epa.gov>; Green, Donzell <green.donzell@epa.gov>
Cc: HORTON JOHN <HORTON.JOHN@mahindra.com>; FAHY JAMES <FAHY.JAMES@mahindra.com>
Subject: Test Order #18-ATV-PE-68 Engine Family JMNCX2.52DMI AND KMNCX2.52DMI Model Year: 2018 and 2019

Dear All,

This note is to inform you that the ROXOR vehicle selected by EPA for Compliance testing was shipped to Ex. 4 CBI yesterday. According to Ex. 4 CBI personnel, service accumulation will be initiated today and should be completed by sometime tomorrow.

The contacts of the Ex. 4 CBI personnel managing the service accumulation are:

Ex. 4 CBI

Ex. 4 CBI

Please let me know the date the test will be scheduled and confirm the test location, so I can fill out the "Statement of Manufacturer Intent to Witness Test Vehicle Set-up" form.
Also, I wanted to let you know the communication I received regarding this test order (Test Order 18-ATVB-PE-68) only contains attachment 1, 3 and 4.
Please let me know in case you also require attachment 2 to be filled and submitted.
Finally, please send me the document you referred during our meeting as "Blue Sheet" so I can fill it out and submit to you.

Thanks and kind regards,

Henrique R. Martins

Sr Manager
Technical and Regulatory Affairs
Certification, Homologation, and Compliance
Mahindra Automotive North American Technical Center
275 Rex Blvd
Auburn Hills, MI 48326
(248) 268-6600

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Message

From: LaCroix, John [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=6B0C24B257E14C91A480AEBC230C8CA8-LACROIX, JOHN]
Sent: 8/29/2016 5:53:24 PM
To: Lit Chan [lchan@ramboll.com]
Subject: RE: MNATC Letter of Intent (LOI) with an appendix of the EPA questionnaire (Manufacture Code of MNC)

Can't open the 2nd file.

From: Lit Chan [mailto:lchan@ramboll.com]
Sent: Monday, August 29, 2016 1:22 PM
To: LaCroix, John <lacroix.john@epa.gov>
Cc: Paul Kerns <PKerns@ramboll.com>
Subject: Fwd: MNATC Letter of Intent (LOI) with an appendix of the EPA questionnaire (Manufacture Code of MNC)

Hi John,

Paul asked me to forward you this LOI. He has issues with his computer. We will see you in a bit.

Lit

Begin forwarded message:

> **From:** "Lit Chan" <lchan@ramboll.com>
> **To:** "Cleophas Jackson" <jackson.cleophas@epa.gov>
> **Cc:** "David Swain" <swain.david@epa.gov>, "Paul Kerns" <PKerns@ramboll.com>
> **Subject: Fwd: MNATC Letter of Intent (LOI) with an appendix of the EPA questionnaire (Manufacture Code of MNC)**
>
> Here was the MNATC's letter of intent sent to David, which included an appendix that has responses to the pre-meeting prelim. questionnaires.
>
> Begin forwarded message:
>
> From: "Paul Kerns" <PKerns@ramboll.com<mailto:PKerns@ramboll.com>>
> To: "swain.david@epa.gov<mailto:swain.david@epa.gov>" <swain.david@epa.gov<mailto:swain.david@epa.gov>>
> Cc: "Lit Chan" <lchan@ramboll.com<mailto:lchan@ramboll.com>>
> Subject: MNATC Letter of Intent (LOI) with an appendix of the EPA questionnaire (Manufacture Code of MNC)
>
> Office of Transportation and Air Quality
> U.S. Environmental Protection Agency
> Attn: Mr. David Swain

Dear David,

Attached is the Mahindra North American Technical Center, Inc.' s (MNATC) Letter of Intent (LOI) with an appendix of the EPA questionnaire (Manufacture Code of MNC). Lit Chan will be contacting you tomorrow to discuss setting up a meeting with the MNATC team. Let us know, if you have any questions.

Yours sincerely
Paul Kerns

Senior Manager
Mobile Emissions

D +1 415 899 0731
M +1 586 354 0033
PKerns@ramboll.com<mailto:PKerns@ramboll.com>

Ramboll Environ
773 San Marin Drive
Suite 2115
Novato, CA 94998
USA
www.ramboll-environ.com<http://www.ramboll-environ.com/>

[Description: Description: C:\Users\NIP\AppData\Local\Microsoft\Windows\INetCache\Content.Word\Ramboll_Environ_Logo.emf]

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Message

From: LaCroix, John [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=6B0C24B257E14C91A480AEBC230C8CA8-LACROIX, JOHN]
Sent: 7/31/2018 4:34:28 PM
To: MARTINS HENRIQUE [MARTINS.HENRIQUE@mahindra.com]
Subject: RE: Mahindra ROXOR 2019MY Application

This PDF works, Thanks. Dave isn't here today but I will follow up with him when he returns.

John LaCroix
Senior Environmental Employment (SEE)
Cooperative with the Compliance Division
USEPA
734-214-4463

From: MARTINS HENRIQUE [mailto:MARTINS.HENRIQUE@mahindra.com]
Sent: Tuesday, July 31, 2018 12:29 PM
To: LaCroix, John <lacroix.john@epa.gov>; Swain, David <swain.david@epa.gov>
Cc: HORTON JOHN <HORTON.JOHN@mahindra.com>; FAHY JAMES <FAHY.JAMES@mahindra.com>
Subject: RE: Mahindra ROXOR 2019MY Application

Dear John Lacroix,

Thank you for informing that the label image could not be opened.
I am resending the picture in a pdf file this time.

Please confirm the pdf file can be opened.

Thanks and kind regards,

Henrique R. Martins

Sr Manager
Technical and Regulatory Affairs
Certification, Homologation, and Compliance
Mahindra Automotive North American Technical Center
1055 W Square Lake Road
Troy, MI 48098
(248) 268-6600

From: MARTINS HENRIQUE
Sent: Tuesday, July 31, 2018 11:19 AM
To: 'Swain, David' <swain.david@epa.gov>
Cc: 'LaCroix, John' <lacroix.john@epa.gov>; HORTON JOHN <HORTON.JOHN@mahindra.com>; FAHY JAMES

<FAHY.JAMES@mahindra.com>
Subject: RE: Mahindra ROXOR 2019MY Application

Dear David Swain,

Following-up from our last call, find below an updated art-work draft for the "OFF-ROAD USE ONLY" label with the additional language warning against altering ROXOR to convert it into an on-road vehicle.
Please let us know if you agree with the language and we will release it to print.

Also, after our last call we learned that our product strategy team is planning to offer Ex. 4 CBI
Although this does not affect Emissions, it is a change in the "Supplemental Information to Application for Certification for Engine Family JMNCX2.52DM1" for 2018MY (2018MY CBI application, page 10).

Ex. 4 CBI

We expect to be able to submit our 2019MY application by tomorrow (August 1st, 2018).

Thanks and kind regards,

Henrique R. Martins

Sr Manager
Technical and Regulatory Affairs
Certification, Homologation, and Compliance
Mahindra Automotive North American Technical Center
1055 W Square Lake Road
Troy, MI 48098
(248) 268-6600

From: MARTINS HENRIQUE
Sent: Monday, July 23, 2018 10:46 AM
To: 'Swain, David' <swain.david@epa.gov>
Cc: LaCroix, John <lacroix.john@epa.gov>; HORTON JOHN <HORTON.JOHN@mahindra.com>; FAHY JAMES <FAHY.JAMES@mahindra.com>
Subject: RE: Mahindra ROXOR 2019MY Application - "OFF-ROAD USE ONLY" label

Dear David Swain,

Following-up from our call on Friday, find below a draft proposal for the "OFF-ROAD USE ONLY" label with the additional language warning against altering ROXOR to convert it into an on-road vehicle.

Please review it and let us know if you agree with the language, so we will finalize formatting.

Thanks in advance and kind regards,

Henrique R. Martins

Sr Manager
Technical and Regulatory Affairs
Certification, Homologation, and Compliance
Mahindra Automotive North American Technical Center
1055 W Square Lake Road
Troy, MI 48098
(248) 268-6600

Mahindra Rise

From: Swain, David <swain.david@epa.gov>
Sent: Friday, July 20, 2018 3:34 PM
To: MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Cc: LaCroix, John <lacroix.john@epa.gov>; HORTON JOHN <HORTON.JOHN@mahindra.com>; FAHY JAMES <FAHY.JAMES@mahindra.com>
Subject: RE: Mahindra ROXOR 2019MY Application

Please call me

-Dave
(734)214-4377
~~~~~~
| U.S. Environmental Protection Agency |
| Compliance Division |
| Project engineer |
| 2000 Traverwood Drive |
| Ann Arbor, MI 48105 |
~~~~~~

Please consider the environment before printing this email.

From: MARTINS HENRIQUE [mailto:MARTINS.HENRIQUE@mahindra.com]
Sent: Friday, July 20, 2018 2:01 PM
To: Swain, David <swain.david@epa.gov>
Cc: LaCroix, John <lacroix.john@epa.gov>; HORTON JOHN <HORTON.JOHN@mahindra.com>; FAHY JAMES <FAHY.JAMES@mahindra.com>
Subject: RE: Mahindra ROXOR 2019MY Application

Hi David,

Thank you for your response.

The plan for our 2019MY application will be to carryover our 2018MY application with minor updates.
The current drivetrain including exhaust systems, and associated EDV will be unchanged.

I would like to share basic information regarding these updates with you before we submit the application for your review:

Ex. 4 CBI

We are hoping to have a 2019MY introduction by September 1st.
Therefore we will soon submit our application through EPA VERIFY.

Thanks and kind regards,

Henrique R. Martins

Sr Manager
Technical and Regulatory Affairs
Certification, Homologation, and Compliance
Mahindra Automotive North American Technical Center
1055 W Square Lake Road
Troy, MI 48098
(248) 268-6600

From: Swain, David <swain.david@epa.gov>
Sent: Friday, July 20, 2018 11:31 AM
To: MARTINS HENRIQUE <MARTINS.HENRIQUE@mahindra.com>
Cc: HORTON JOHN <HORTON.JOHN@mahindra.com>; FAHY JAMES <FAHY.JAMES@mahindra.com>; LaCroix, John <lacroix.john@epa.gov>
Subject: RE: Mahindra ROXOR 2019MY Application

Hi Henrique,
Can you please email a list of your concerns?
It's possible John (in the cc above) or I can answer your questions by email.
If you want to call me after the email, any time today is fine.
-Dave
(734)214-4377

| U.S. Environmental Protection Agency |
| Compliance Division |
| Project engineer |
| 2000 Traverwood Drive |
| Ann Arbor, MI 48105 |

Please consider the environment before printing this email.

From: MARTINS HENRIQUE [mailto:MARTINS.HENRIQUE@mahindra.com]
Sent: Friday, July 20, 2018 10:41 AM
To: Swain, David <swain.david@epa.gov>
Cc: HORTON JOHN <HORTON.JOHN@mahindra.com>; FAHY JAMES <FAHY.JAMES@mahindra.com>
Subject: Mahindra ROXOR 2019MY Application

Dear David Swain,

Following-up from one of our recent calls, we would like to have a brief discussion about the ROXOR 2019MY application.

Ex. 4 CBI

Although our 2019MY application will be pretty much a carry-over application, there are few issues we would like to discuss with you beforehand.

Would you suggest a couple of date/times that work for you during the week of July 30th – August 3rd?

This will be a short audio meeting and I will send you an agenda once we set-up the time and date.

Thanks and kind regards,

Henrique R. Martins

Sr Manager
Technical and Regulatory Affairs
Certification, Homologation, and Compliance
Mahindra Automotive North American Technical Center
1055 W Square Lake Road
Troy, MI 48098
(248) 268-6600

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