

**Discovery****Part 1**

Issued: 04/24/26

## Application for Emissions Certification

|                                   |                                                                                                                                    |
|-----------------------------------|------------------------------------------------------------------------------------------------------------------------------------|
| Model Year:                       | 2027                                                                                                                               |
| Durability Group:                 | VJLXGPGNNHTR                                                                                                                       |
| Evaporative Family:               | VJLXR0175P1B                                                                                                                       |
| Test Group:                       | VJLXT03.0HTR                                                                                                                       |
| Summary Sheet No:                 | CSI-VJLXT03.0HTR-VJLXR0175P1B                                                                                                      |
| Durability Group Description:     | I6, Otto Cycle<br>Gasoline Fuelled MHEV<br>Sequential Fuel Injection<br>Ceramic Monolith Pd/Rh Catalyst                            |
| Test Group Description:           | 3.0 litre I6 Turbocharged MHEV                                                                                                     |
| Applicable Standards:             | Federal LDT4 – Interim Tier 4 Bin 30<br>California LDT2 – LEV IV SULEV30                                                           |
| Carline Covered:                  | 177: Discovery MHEV                                                                                                                |
| EPA & CARB Response Requested By: | July 20 <sup>th</sup> 2026                                                                                                         |
| For questions, Contact:           | Vahakn Varjabedian (201) 818 – 8139<br>Amy Brambill <a href="mailto:abrambil@jaguarlandrover.com">abrambil@jaguarlandrover.com</a> |



Discovery

Part 1

Issued: 04/24/26

**Table of contents**

| Section | Contents                                                           | Reference, Applicability   |
|---------|--------------------------------------------------------------------|----------------------------|
| 1       | Correspondence and Communications                                  | Common Section, Section 1  |
| 2       | Durability Group Description                                       | Common Section, Section 2  |
| 3       | Evaporative/Refueling Family Description                           | Common Section, Section 3  |
| 4       | Durability Procedure Description                                   | Common Section, Section 4  |
| 5       | Test Group Description                                             |                            |
| 6       | Test Vehicle Description                                           |                            |
| 7       | Test Results                                                       |                            |
| 8       | Emission Testing Waiver Statement                                  |                            |
| 9       | OBD System Description                                             | CBI Version Only           |
| 10      | Description of Alternate-Fueled Vehicles                           | Not applicable             |
| 11      | AECD Descriptions                                                  | Common Section, Section 11 |
| 12      | Description of Vehicles Covered by Certificate and Test Parameters |                            |
| 13      | Projected Sales                                                    | Common Section, Section 13 |
| 14      | Request for Certification                                          | Common Section, Section 14 |
| 15      | Other Information                                                  |                            |
| 16      | Confidential Information                                           | Common Section, Section 16 |
| 17      | California ARB Information                                         |                            |
| 18      | Revisions                                                          |                            |



| Discovery | Part 1 | Issued: 04/24/26 |
|-----------|--------|------------------|
|-----------|--------|------------------|

**5. Test Group Description**

- |        |                                      |                                                                |
|--------|--------------------------------------|----------------------------------------------------------------|
| 5.1.   | Test Group name                      | VJLXT03.0HTR                                                   |
| 5.2.   | Summary Sheet number                 | CSI- VJLXT03.0HTR - VJLXR0175P1B                               |
| 5.3.   | Engine displacement                  | 2996 cm <sup>3</sup>                                           |
| 5.4.   | Arrangement and number of cylinders: |                                                                |
| 5.4.1. | Arrangement of cylinders:            | In-line Configuration.                                         |
| 5.4.2. | Number of cylinders:                 | 6                                                              |
| 5.5.   | Emission standards                   |                                                                |
| 5.5.1. | Vehicle class covered                | Federal – LDT4<br>California – LDT2                            |
| 5.5.2. | Participation in NLEV                | Not applicable                                                 |
| 5.5.3. | Emission standards class             | Federal – Interim Tier 4 Bin 30<br>California – LEV IV SULEV30 |
| 5.5.4. | Applicable emission standards        | Refer to Enclosure 1 of Section 7.                             |



Discovery

Part 1

Issued: 04/24/26

**6. Test Vehicle Description****6.1. Test Vehicles**

| Carline | Test Vehicle No. | Cfg. No. | Engine Displ. (cm <sup>3</sup> ) | Emission Control System             | Engine Code | Trans | ETW  | Axle Ratio | Remarks               |
|---------|------------------|----------|----------------------------------|-------------------------------------|-------------|-------|------|------------|-----------------------|
| 177     | 3DRTT408         | 01       | 2996                             | WR-H02S/TWC/HO2S (2)/DFI/TC/SCE/CAC | 3.0AJMH-19  | S8    | 6000 | 3.55       | Discovery EDV         |
| 177     | 3DRTT408         | 02       | 2996                             | WR-H02S/TWC/HO2S (2)/DFI/TC/SCE/CAC | 3.0AJMH-19  | S8    | 6000 | 3.55       | Discovery FEDV        |
| 232     | 3KMVP032         | 00       | 4395                             | 2WR-HO2S/2TWC/2HO2S/D F/2TC/2CAC    | 4.4NC10-22  | S8    | 6000 | 3.31       | Range Rover Evaps EDV |

For complete vehicle descriptions, refer to Vehicle Information submitted to the EPA Central Data Exchange (CDX) EV-CIS System, or to the Summary Sheet enclosed in Section 7 of this application.



Discovery

Part 1

Issued: 04/24/26

## 6.1.1. Test Vehicle Description (EV-CIS VI outputs)

Test Vehicle Information Submission

Test Vehicle Information Details

**Information Process Code : C****EPA Manufacturer Code : JLX****Vehicle Identification Text : 3DRTT408****Vehicle Configuration Number : 1**

Vehicle Configuration Details

Vehicle Description Details

**Manufacturer Vehicle Configuration Number : 1****Test Group Name : SJLXT03.0HTR****Evaporative Refueling Family Name : SJLXR0175P1Z****Model Year : 2027****Actual Test Vehicle Make Text : Land Rover****Actual Test Vehicle Model Text : Discovery MHEV**

Drive Source Details

**Drive Source Identifier : C****Fuel Identifier : G**

Drive Source Details

**Drive Source Identifier : E****Fuel Identifier : EL****Fuel Cell Indicator : N****Rechargeable Energy Storage System Indicator : Y****Rechargeable Energy Storage Device Identifier : B****Off Board Charge Capability Indicator : Y****Test Drive Code : 4****Shift Indicator Light Usage Identifier : 1****Aged Component Usage Identifier : 4**

Odometer Correction Details

**Correction Initial Value : 0****Correction Factor Value : 1.00****Correction Sign Identifier : -****Correction Units Code : M****Engine Code Text : 3.0AJMM-19****Engine Rated Horsepower Value : 360****Engine Displacement Value : 3.0**

Air Aspiration Details



Discovery

Part 1

Issued: 04/24/26

**Air Aspiration Method Identifier : TS**  
**Air Aspiration Device Count : 2**  
**Air Aspiration Configuration Identifier : PS**

**Charge Air Cooler Identifier : L**  
Vehicle Specifications Details  
**Curb Weight Value : 5560**  
**Equivalent Test Weight Value : 6000**  
**Gross Vehicle Weight Rating Value : 7075**  
**NV Ratio Value : 37.3**  
**Axle Ratio Value : 3.55**

Transmission Specifications Details  
**Light Duty Transmission Type Identifier : SA**  
**Transmission Lockup Indicator : Y**  
**Transmission Creeper Gear Indicator : N**  
**Transmission Gear Count : 8**

Target Set Coefficient Details  
**Test Procedure Dynamometer Coefficients Category : US06**  
**Target CoefficientA Value : 66.1**  
**Target CoefficientB Value : 0.207**  
**Target CoefficientC Value : 0.02903**  
**Set CoefficientA Value : 19.761**  
**Set CoefficientB Value : -0.06100**  
**Set CoefficientC Value : 0.028239**

Target Set Coefficient Details  
**Test Procedure Dynamometer Coefficients Category : C-H-E**  
**Target CoefficientA Value : 66.1**  
**Target CoefficientB Value : 0.207**  
**Target CoefficientC Value : 0.02903**  
**Set CoefficientA Value : 19.761**  
**Set CoefficientB Value : -0.06100**  
**Set CoefficientC Value : 0.028239**

Target Set Coefficient Details  
**Test Procedure Dynamometer Coefficients Category : Cold-CO**  
**Target CoefficientA Value : 72.71**  
**Target CoefficientB Value : 0.228**  
**Target CoefficientC Value : 0.03193**  
**Set CoefficientA Value : 19.761**



Discovery

Part 1

Issued: 04/24/26

**Set CoefficientB Value :** -0.06100**Set CoefficientC Value :** 0.028239**Manufacturer Comment Text :** Discovery 3.0L MHEV EDV. 255/60R19 Pirelli  
Scorpion Verde Tires.

EPA Generated Test Vehicle Details

**Original Receipt Date :** 20240221**Hybrid Vehicle Indicator :** Y**Adjusted Loaded Vehicle Weight Value :** 6317**Loaded Vehicle Weight Value :** 5860**Total Road Load Horsepower Value :** 19.9

Transaction Status Details

**Transaction Status Identifier :** ACCEPTED



Discovery

Part 1

Issued: 04/24/26

**Information Process Code : N****EPA Manufacturer Code : J LX****Vehicle Identification Text : 3KMVP032****Vehicle Configuration Number : 0**

Vehicle Configuration Details

Vehicle Description Details

**Manufacturer Vehicle Configuration Number : 0****Test Group Name : NJLXT04.4GTE****Evaporative Refueling Family Name : NJLXR0175P1B****Model Year : 2022****Actual Test Vehicle Make Text : LAND ROVER****Actual Test Vehicle Model Text : New Range Rover**

Drive Source Details

**Drive Source Identifier : C****Fuel Identifier : G****Fuel Cell Indicator : N****Rechargeable Energy Storage System Indicator : N****Test Drive Code : 4****Shift Indicator Light Usage Identifier : 1****Aged Component Usage Identifier : 4**

Odometer Correction Details

**Correction Initial Value : 0****Correction Factor Value : 1.00****Correction Sign Identifier : -****Correction Units Code : M****Engine Code Text : 4.4NC10-22****Engine Rated Horsepower Value : 530****Engine Displacement Value : 4.4**

Air Aspiration Details

**Air Aspiration Method Identifier : TC****Air Aspiration Device Count : 2****Air Aspiration Configuration Identifier : P****Charge Air Cooler Identifier : L**

Vehicle Specifications Details

**Curb Weight Value : 5705****Equivalent Test Weight Value : 6000****Gross Vehicle Weight Rating Value : 7385**



Discovery

Part 1

Issued: 04/24/26

**NV Ratio Value :** 22.9  
**Axle Ratio Value :** 3.31

Transmission Specifications Details

**Light Duty Transmission Type Identifier :** SA  
**Transmission Lockup Indicator :** Y  
**Transmission Creeper Gear Indicator :** N  
**more Transmission Gear Count :** 8

Target Set Coefficient Details

**Test Procedure Dynamometer Coefficients Category :** US06  
**Target CoefficientA Value :** 46.948  
**Target CoefficientB Value :** -0.11133  
**Target CoefficientC Value :** 0.034230  
**Set CoefficientA Value :** 50.874  
**Set CoefficientB Value :** -0.11143  
**Set CoefficientC Value :** 0.034206

Target Set Coefficient Details

**Test Procedure Dynamometer Coefficients Category :** C-H-E  
**Target CoefficientA Value :** 46.948  
**Target CoefficientB Value :** -0.11133  
**Target CoefficientC Value :** 0.034230  
**Set CoefficientA Value :** 50.874  
**Set CoefficientB Value :** -0.11143  
**Set CoefficientC Value :** 0.034206

Target Set Coefficient Details

**Test Procedure Dynamometer Coefficients Category :** Cold-CO  
**Target CoefficientA Value :** 51.643  
**Target CoefficientB Value :** -0.12246  
**Target CoefficientC Value :** 0.037653  
**Set CoefficientA Value :** 50.874  
**Set CoefficientB Value :** -0.11143  
**Set CoefficientC Value :** 0.034206

**Manufacturer Comment Text :** New Range Rover NC10 4.4 V8 Turbocharged LWB.  
285/45R22 Tires. Evaps EDV.

EPA Generated Test Vehicle Details



Discovery

Part 1

Issued: 04/24/26

**Original Receipt Date :** 20211110  
**Hybrid Vehicle Indicator :** N  
**Adjusted Loaded Vehicle Weight Value :** 6545  
**Loaded Vehicle Weight Value :** 6005  
**Total Road Load Horsepower Value :** 16.9

Transaction Status Details

**Transaction Status Identifier :** ACCEPTED



## Discovery

## Part 1

Issued: 04/24/26

## 6.2 EDV Selection

The Discovery is the only vehicle covered by this test group so is the only vehicle considered for worst-case. Using provisions in 86.1828-01, the Discovery, on 19" Pirelli tires is expected to be worst-case for exhaust emission compliance within this test group with the highest road-load power. There is only one ETW category to consider in this test group. The EDV for this test group was carried out in the worst-case driver mode. The worst-case driver mode for this test group is normal mode, with Sport mode selected by the transmission shifter. Driver modes are described in section 12.3.

All certified vehicle configurations are represented by data from the EDVs listed below:

## 6.3 EV-CIS Test Numbers

| Vehicle-ID | Config. | Type of Test       | Test Number  |
|------------|---------|--------------------|--------------|
| 3DRTT408   | 01      | FTP                | SJLX10084767 |
|            |         | HWY                | SJLX10084768 |
|            |         | US06               | SJLX10084769 |
|            |         | SC03               | SJLX10084770 |
|            |         | FTP20              | SJLX10084771 |
|            |         | FTP50              | SJLX10084772 |
| 3KMVP032   | 00      | 3-diurnal Set A    | NJLX10072639 |
|            |         | 3-diurnal Set B    | NJLX10072640 |
|            |         | Running Loss Set A | NJLX10072654 |
|            |         | Running Loss Set B | NJLX10072656 |
|            |         | ORVR Set A         | NJLX10072655 |
|            |         | ORVR Set B         | NJLX10072657 |
|            |         | Canister Bleed     | NJLX10073373 |



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**Discovery**

**Part 1**

Issued: 04/24/26

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**7. Test Results (Cover page)**

Refer to the enclosed Certification Summary Information Report processed by the EPA EV-CIS system.

## 8. Emission Testing Waiver Statements

### High Altitude Testing

Based on an engineering evaluation of appropriate high-altitude emission testing Jaguar Land Rover state that light-duty vehicles included in this application comply with the applicable emission standards at high altitude.

According to 40 CFR §86.1829-01(b)(1)(ii)(B) Jaguar Land Rover waive high altitude emissions data submittal on the basis of this statement.

### Data submittal waiver for Idle CO Testing

Based on an engineering evaluation of appropriate Idle CO emissions Jaguar Land Rover state that light-duty vehicles included in this application comply with all applicable idle CO emission standards.

According to 40 CFR §86.1829-01(b)(5)(ii) Jaguar Land Rover waive Idle CO emissions data submittal on the basis of this statement.

### Data submittal for 2-Day Evaporative Testing

Based on an engineering evaluation of appropriate evaporative emission testing, Jaguar Land Rover state that all vehicles in evaporative/refuelling family VJLXR0175P1B comply with the applicable two-day evaporative emission standard.

Jaguar Land Rover therefore waive 2-Diurnal Evaporative emissions data submittal on this basis.

### 91 RON (Knock Sensor)

Pursuant to VPCD-97-01, Jaguar Land Rover's engineering evaluation states the city and highway fuel economy test result differences between 91 RON operation and 96 RON operation is within 3%, and there are no emissions increases (beyond normal test variability) using 91 RON fuel when tested on the FTP.

### Data submittal waiver for Formaldehyde (HCHO) Measurement

Based on an engineering evaluation, Jaguar Land Rover states that light-duty vehicles included in this application comply with all applicable HCHO standards.

### Data submittal waiver for Non-Methane Organic Gas (NMOG) Measurement

Based on test data from engineering programmes Jaguar Land Rover use the following NMOG:NMHC ratios in order to express NMOG emissions:

Cold and Hot Start tests, E0 fuels:  $\text{NMOG} = \text{NMHC} \times 1.03$

Cold Start tests, E10 fuels:  $\text{NMOG} = \text{NMHC} \times 1.10$

Hot Start tests, E10 fuels:  $\text{NMOG} = \text{NMHC} \times 1.03$

**Data submittal waiver for Spit-Back testing**

All Jaguar Land Rover Gasoline fuelled vehicles are certified to the refuelling emissions standards in §86.1811-04(e), and inherently meet the fuel dispensing spitback standards as part of compliance with the refuelling emissions requirements.

Compliance with the applicable standards is for the Full Useful life of the vehicle.

Fuel dispensing spitback testing of Jaguar Land Rover vehicles is therefore waived in accordance with §86.1810-01(l).

**Evaporative Leak Detection**

JLR OBD system conforms to current OBD requirements covered in Section 1968.2 of Title 13, CCR.

JLR OBD system is capable of detecting 0.020" inch diameter orifice leakage in the evaporative emissions system.

**9. OBD Compliance Statement**

Jaguar Land Rover states that the OBD system for Test Group VJLXT03.0HTR meets the full intent of the clean air act as amended in 1970 section 202(m), and the applicable federal OBD regulations, contained in 40 CFR §86.005-17 and 40 CFR §86.1806-01. Furthermore, Jaguar Land Rover states that the OBD system complies with all the requirements of Title 13 CCR 1968.2.



## Discovery

## Part 1

Issued: 04/24/26

**12. Description of Vehicles Covered by Certificate and Test Parameters****12.1. Description of Vehicle**

| Carline | Model Name | Vehicle Class Fed/CAL | Emission Control System Description |                 |     |          |                  |                                 |                             | Engine Code | N° Valves/ Cyl | Sales Area | Trans & Over-drive | SIL | Standard Tire Size (optional sizes) | N/V Ratio | ETW - lb. | Fuel Tank Volume - gal |
|---------|------------|-----------------------|-------------------------------------|-----------------|-----|----------|------------------|---------------------------------|-----------------------------|-------------|----------------|------------|--------------------|-----|-------------------------------------|-----------|-----------|------------------------|
|         |            |                       | Type                                | Catalyst Config | EGR | Air Pump | Fuel System Type | Intake Air Aspiration Method    | Other                       |             |                |            |                    |     |                                     |           |           |                        |
| 177     | Discovery  | LDT4/LDT2             | Catalyst                            | TWC             | N/A | N/A      | DFI              | Turbocharged and E-Supercharged | WR-H02S/HO2S(2)/DFI/SCE/CAC | 3.0AJMM-19  | 4              | 50-state   | S8                 | No  | 255/60R19                           | 25.3      | 6000      | 23.8                   |
| 177     | Discovery  | LDT4/LDT2             | Catalyst                            | TWC             | N/A | N/A      | DFI              | Turbocharged and E-Supercharged | WR-H02S/HO2S(2)/DFI/SCE/CAC | 3.0AJMM-19  | 4              | 50-state   | S8                 | No  | 255/55R20                           | 25.4      | 6000      | 23.8                   |
| 177     | Discovery  | LDT4/LDT2             | Catalyst                            | TWC             | N/A | N/A      | DFI              | Turbocharged and E-Supercharged | WR-H02S/HO2S(2)/DFI/SCE/CAC | 3.0AJMM-19  | 4              | 50-state   | S8                 | No  | 275/45R21                           | 25.6      | 6000      | 23.8                   |
| 177     | Discovery  | LDT4/LDT2             | Catalyst                            | TWC             | N/A | N/A      | DFI              | Turbocharged and E-Supercharged | WR-H02S/HO2S(2)/DFI/SCE/CAC | 3.0AJMM-19  | 4              | 50-state   | S8                 | No  | 285/40R22                           | 25.4      | 6000      | 23.8                   |

## Discovery

## Part 1

Issued: 04/24/26

## 12.2. Test Parameters

## 12.2.1. Engine Starting Procedure

Position transmission gear selector in P or N. Switch on ignition and operate starter. Release starter switch as soon as the engine starts.

## 12.2.2. Shift Schedules

## Shifting

**Automatic Transmission Summary**

| A/T code | Class     | No. of fwd gears | Overdrive | Gear ratios |
|----------|-----------|------------------|-----------|-------------|
| 8HP76    | automatic | 8                | yes       | 5.500       |
|          |           |                  |           | 3.520       |
|          |           |                  |           | 2.200       |
|          |           |                  |           | 1.720       |
|          |           |                  |           | 1.317       |
|          |           |                  |           | 1.000       |
|          |           |                  |           | 0.823       |
|          |           |                  |           | 0.640       |

**General Description**

The transmission is an electronically controlled, fully automatic, synchronous 8 speed transmission. The shift points and converter lock up are functions of throttle pedal position and vehicle speed. Each transmission calibration contains the individual shift points for the corresponding transmission application. Strategies relating to the automatic transmission are documented in the ACED document contained in Section 16.

***Special Features:***

The automatic transmission fluid is a fill for life oil and does not require service. There is no dipstick tube.

The gear selector allows the selection of Park, Reverse, Neutral, Drive and Drive (S) ranges. A manual sequential shift option is included. Sequential manual gear selection is selected by moving the transmission gear selector to the "S" (Sport) position. Upshifts and downshifts may then be made by operating steering wheel mounted shift paddles

**Discovery****Part 1**

Issued: 04/24/26

**Shifting instruction****Gear-shift interlock**

A brake pedal/gear-shift interlock is incorporated in the gear selector mechanism. The gear selector lever may only be moved from the Park position if the ignition is "on" and footbrake is pressed.

The vehicle is moved out of P by pressing a release lever on the front of the selector lever while simultaneously depressing the brake pedal. P may be reselected from any gear position by pressing the button located on the top of the selector.

**Drive Mode**

During normal forward operation of the vehicle the transmission shifts automatically when the transmission selector is positioned in "Drive".

**User Selectable modes**

The Discovery models are fitted with a lever selector which operates through R-N-D modes sequentially by moving the selector forward or backward. The vehicle is moved out of P by pressing a release lever on the front of the selector lever while simultaneously depressing the brake pedal. P may be reselected from any gear position by pressing the button located on the top of the selector. Manual shifting is available by operating paddles attached to the rear of the steering wheel, or by operating the select lever (rearward for an upchange, forward for a downchange) while the lever is in the manual position. Manual shifting is enabled by moving the selector to the left.

Jaguar Land Rover has developed a range of driver selectable modes. Not all modes are available on all products and not all modes are considered to be on-road modes. These driver selectable modes change driveability and transmissions calibratable comfort functions. The driveability functions which are modified are the comfort filters to provide a balance of control, response and comfort to suit the selected mode. The relationship between the physical driver pedal position and the ECU pedal position is changed, effectively making the vehicle feel more or less responsive. The functionality of emissions control strategies is not altered.

In Dynamic Drive mode, The PCM applies a scalar to make the accelerator pedal more sensitive. The transmission applies the same shiftpoints as in Normal drive mode. The PCM applies a scalar to make the accelerator pedal more sensitive.

| <b>Driver mode</b>                | <b>Distance travelled</b> |
|-----------------------------------|---------------------------|
| <b>Normal mode - D</b>            | On-road                   |
| <b>Dynamic mode</b>               | On-road                   |
| <b>Grass - Gravel - Snow mode</b> | Off-road                  |
| <b>Dynamic mode</b>               | Off-road                  |
| <b>Mud &amp; Ruts mode</b>        | Off-road                  |
| <b>Sand mode</b>                  | Off-road                  |
| <b>Low Range</b>                  | Off-road                  |

**Discovery****Part 1**

Issued: 04/24/26

**Chassis Dynamometer Operation**

If the vehicle is going to be operated on a chassis dynamometer, disable the traction control facility immediately after selecting drive.

**Shift Schedules**

As defined in EV-CIS

**Special testing procedures****Cooling fans**

For all emissions/fuel economy test cycles, a single fan, placed in the 'down' position, is required for engine cooling purposes.

12.2.3 EPA Shift Schedule: FTA / HWA

12.2.4 Dynamometer Loading Information (LVW):

| Model     | ETW (lbs) | Tyre size | Target Coefficients |         |          | Set Coefficients* |          |          | TRLHP @50 |
|-----------|-----------|-----------|---------------------|---------|----------|-------------------|----------|----------|-----------|
|           |           |           | A                   | B       | C        | a                 | b        | c        |           |
| Discovery | 6000      | 255/60R19 | 66.1                | 0.207   | 0.02903  | 19.761            | -0.06100 | 0.02824  | 25.3      |
| Discovery | 6000      | 255/55R20 | 53.4                | 0.207   | 0.02877  | Untested          | Untested | Untested | 18.1      |
| Discovery | 6000      | 275/45R21 | 52.347              | 0.27583 | 0.031335 | Untested          | Untested | Untested | 19.3      |
| Discovery | 6000      | 285/40R22 | 53.4                | 0.207   | 0.02877  | Untested          | Untested | Untested | 18.1      |

\* 4WD Dynamometer

Discovery

Part 1

Issued: 04/24/26

## 12.2.5. Evaporative/Refuelling Data

## 12.2.5.1. Evaporative Testing Parameters

Canister Loading rate – 15 g/hr.

**Fuel Tank Parameters**

## Fuel Tank Volumes

| Carline   | Evaporative Code | Nominal Capacity (USG) | Useable 40% Fill | Vapor volume at 40% Fill |
|-----------|------------------|------------------------|------------------|--------------------------|
| Discovery | D7u-15           | 23.8                   | 9.5              | 19.8                     |

## FTTP Codes

| Carline   | Evaporative Code | FTTP Code |
|-----------|------------------|-----------|
| Discovery | D7u-15           | 462-17    |

## Discovery

## Part 1

Issued: 04/24/26

| Time (s) | RR Fuel | RR Vapor | RRS Fuel | RRS Vapor |
|----------|---------|----------|----------|-----------|
| 1        | 104.0   | 105.1    | 103.9    | 110.4     |
| 60       | 103.5   | 104.5    | 104.8    | 109.5     |
| 120      | 103.4   | 104.8    | 105.6    | 109.7     |
| 180      | 101.0   | 104.9    | 105.7    | 110.1     |
| 240      | 101.5   | 103.8    | 106.6    | 110.5     |
| 300      | 102.5   | 104.6    | 107.0    | 111.0     |
| 360      | 102.9   | 105.5    | 107.5    | 111.8     |
| 420      | 102.0   | 104.7    | 107.7    | 111.9     |
| 480      | 102.6   | 105.2    | 108.0    | 111.8     |
| 540      | 102.8   | 106.0    | 108.6    | 112.0     |
| 600      | 103.4   | 106.5    | 109.0    | 112.3     |
| 660      | 103.1   | 105.8    | 109.0    | 112.9     |
| 720      | 103.5   | 107.0    | 109.5    | 113.0     |
| 780      | 103.7   | 106.9    | 110.0    | 112.2     |
| 840      | 104.2   | 108.5    | 110.0    | 112.9     |
| 900      | 104.4   | 108.9    | 110.2    | 113.3     |
| 960      | 104.6   | 110.1    | 110.3    | 113.8     |
| 1020     | 104.9   | 110.3    | 110.9    | 114.3     |
| 1080     | 104.9   | 108.8    | 111.3    | 114.9     |
| 1140     | 105.3   | 110.2    | 111.6    | 114.9     |
| 1200     | 106.1   | 110.5    | 111.5    | 115.2     |
| 1260     | 106.1   | 111.3    | 111.7    | 115.5     |
| 1320     | 106.2   | 111.4    | 111.8    | 115.9     |
| 1380     | 106.5   | 110.9    | 112.7    | 117.0     |
| 1440     | 107.0   | 112.2    | 113.4    | 118.4     |
| 1500     | 107.2   | 113.3    | 113.9    | 118.9     |
| 1560     | 107.0   | 112.0    | 114.3    | 119.2     |
| 1620     | 108.6   | 111.6    | 115.0    | 119.0     |
| 1680     | 109.0   | 112.7    | 115.7    | 119.5     |
| 1740     | 108.8   | 112.4    | 115.8    | 118.6     |
| 1800     | 109.0   | 112.7    | 116.4    | 119.9     |
| 1860     | 108.7   | 113.8    | 117.0    | 120.2     |
| 1920     | 109.0   | 114.5    | 117.5    | 120.7     |
| 1980     | 109.7   | 115.5    | 117.7    | 120.7     |
| 2040     | 109.5   | 114.6    | 117.3    | 120.2     |
| 2100     | 110.2   | 115.7    | 117.1    | 120.6     |
| 2160     | 109.8   | 114.8    | 117.3    | 121.6     |
| 2220     | 111.3   | 114.0    | 117.9    | 121.5     |
| 2280     | 111.8   | 115.4    | 118.4    | 123.0     |



| Discovery | Part 1 |       |       |       | Issued: 04/24/26 |
|-----------|--------|-------|-------|-------|------------------|
| 2340      | 111.7  | 114.8 | 118.9 | 122.1 |                  |
| 2400      | 112.2  | 115.0 | 120.2 | 124.2 |                  |
| 2460      | 112.6  | 115.9 | 121.1 | 124.9 |                  |
| 2520      | 112.1  | 116.6 | 121.6 | 126.3 |                  |
| 2580      | 113.7  | 118.5 | 121.9 | 126.1 |                  |
| 2640      | 112.9  | 117.4 | 122.8 | 126.2 |                  |
| 2700      | 114.6  | 119.1 | 123.0 | 127.6 |                  |
| 2760      | 114.0  | 120.5 | 123.2 | 128.3 |                  |
| 2820      | 114.5  | 120.1 | 123.6 | 129.2 |                  |
| 2880      | 114.2  | 119.6 | 124.3 | 128.9 |                  |
| 2940      | 114.6  | 119.8 | 124.8 | 129.4 |                  |
| 3000      | 115.2  | 118.5 | 124.0 | 128.5 |                  |
| 3060      | 116.1  | 119.4 | 124.3 | 128.6 |                  |
| 3120      | 117.1  | 121.0 | 125.0 | 129.8 |                  |
| 3180      | 115.7  | 121.4 | 125.1 | 129.8 |                  |
| 3240      | 116.2  | 118.9 | 125.1 | 129.3 |                  |
| 3300      | 116.6  | 119.5 | 125.3 | 129.4 |                  |
| 3360      | 117.2  | 119.6 | 126.5 | 130.2 |                  |
| 3420      | 117.0  | 120.6 | 127.2 | 131.7 |                  |
| 3480      | 116.3  | 121.0 | 127.7 | 132.2 |                  |
| 3540      | 117.1  | 120.4 | 128.3 | 132.6 |                  |
| 3600      | 116.9  | 120.9 | 128.6 | 132.0 |                  |
| 3660      | 118.2  | 121.9 | 128.4 | 132.5 |                  |
| 3720      | 118.0  | 122.3 | 128.8 | 133.0 |                  |
| 3780      | 118.8  | 122.9 | 129.6 | 134.4 |                  |
| 3840      | 118.4  | 122.5 | 129.8 | 134.7 |                  |
| 3900      | 118.8  | 122.8 | 130.3 | 134.9 |                  |
| 3960      | 118.8  | 123.4 | 130.1 | 134.3 |                  |
| 4020      | 119.1  | 122.8 | 130.2 | 134.2 |                  |
| 4080      | 119.1  | 122.8 | 130.6 | 134.0 |                  |
| 4140      | 119.5  | 123.7 | 131.0 | 134.9 |                  |
| 4200      | 119.8  | 124.5 | 131.7 | 135.9 |                  |
| 4260      | 120.6  | 126.2 | 131.9 | 137.1 |                  |
| 4307      | 121.1  | 127.0 | 132.4 | 137.6 |                  |



Discovery

Part 1

Issued: 04/24/26

### 12.2.5.2. Fuel Tank Temperature Profile Report (Land Rover FP9.8 & Ford CETP 00.00-L-414)

Compiled By: Lee Dunn      Date: June 2023

#### Subject

Fuel tank temperature profile for Range Sport & Range Rover to EPA standard.

#### Summary

Vehicle tests were conducted to determine a fuel tank temperature profile for the Range Rover & Range Rover Sport.

#### Conclusion

The fuel tank temperature profile determined by this test complies with Environmental Protection Agency procedure detailed in 40CFR 86.129.94.

#### Test Vehicle Specification

FTTP Code: MLA-22  
Model: Range Rover LWB  
Transmission: 8 speed automatic  
Fleet identity: 3KRVB059  
Test Weight: 6000lbs

FTTP Code: MLA-22  
Model: Range Rover Sport  
Transmission: 8 speed automatic  
Fleet identity: 3PNTT005  
Test Weight: 5500lbs

#### Test Location

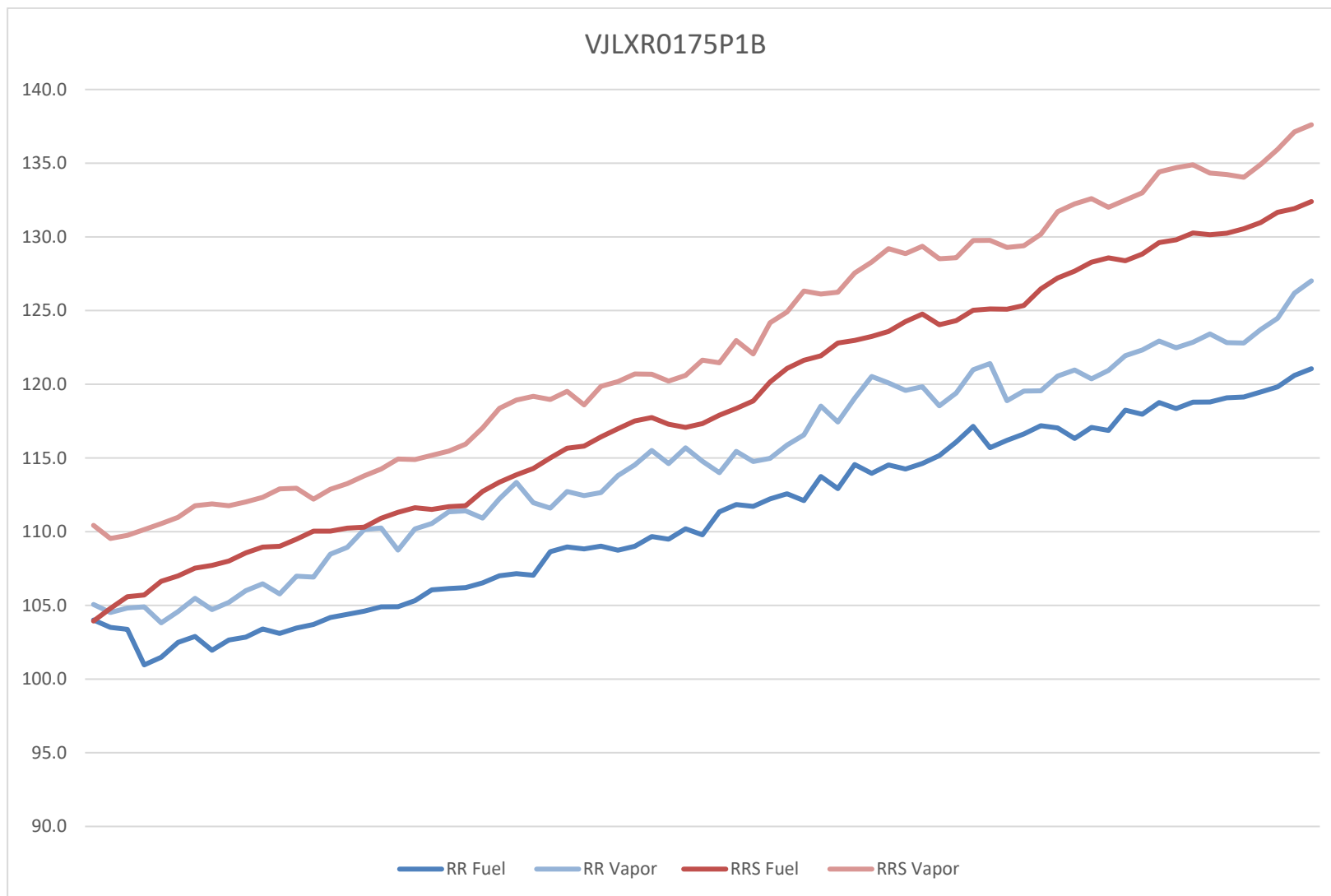
Exponent Phoenix, AZ  
USA



Discovery

Part 1

Issued: 04/24/26



**14 Request for Certification****14.1 Statement of Compliance**

Refer to Common Section, Section 14.

**14.2. Request for certificate**

Based on Jaguar Land Rover's good engineering judgment, all the vehicles described in this Application for Certification comply with all applicable intermediate and full useful life standards.

Therefore, Jaguar Land Rover herewith applies for a federal Certificate of Conformity and a California ARB Executive Order for Test Group VJLXT03.0HTR.

This Test Group complies with all applicable regulations contained in Title 40, Code of Federal Regulations, Part 86 and the California Code of Regulations.



Ian Munden  
Manager  
Emissions Certification  
Jaguar Land Rover

**15. Other Information**

- 15.1. Label according to 40 CFR § 86.1807-01 and according to California Motor Vehicle Emission Control Label (VECI Label) Specifications.

15.1.1 .



- 15.1.2. Label Location: Under-bonnet.



15.2 Fee Filing Form

See attached page



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**Discovery**

**Part 1**

Issued: 04/24/26

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15.3. OBD System Approval Letter

See attached page

## Other Information

### Adjustable Parameters

There are no parameters present on any vehicle covered by this application that can be considered adjustable within the context of 40CFR Part 86.1833-01.

### Fuel Specifications

#### Fuels Recommended to the Owner

Full statements concerning fuel recommendations are contained in the Vehicle Owners Handbooks.

#### Test and Service Accumulation Fuel

All test and service accumulation fuels relating to this Application for Certification are equivalent to those specified in 40CFR Part 86, Subpart S, and the California Exhaust Emission Standards and Test Procedures for 2001 and Subsequent Model Passenger Cars, Light -Duty Trucks, and Medium-Duty Vehicles. Specifications and/or analyses will be supplied on request.

### Lubricant specifications

#### Engine

|                     | Factory fill      |     | Recommended to ultimate purchaser |     | To be used in test vehicles |     |
|---------------------|-------------------|-----|-----------------------------------|-----|-----------------------------|-----|
| Generic type        | Hydrocarbon       |     | Hydrocarbon                       |     | Hydrocarbon                 |     |
| Service designation | CASTROL<br>BOT942 | LG4 | CASTROL<br>BOT942                 | LG4 | CASTROL<br>BOT942           | LG4 |
| Viscosity           | SAE 0W20          |     | SAE 0W20                          |     | SAE 0W20                    |     |

#### Automatic Transmissions

The transmissions are sealed for life and the factory fill materials are listed below. All lubricants are hydrocarbon based and contain no friction modifiers.

ZF 8HP70 8 Speed Transmission: ZF Lifeguard

#### Drive Axle and Differential

The differentials are sealed for life and the factory fill materials are listed below. All lubricants are hydrocarbon based and contain no friction modifiers.

All Test Groups: Castrol BOT750B

### 5-Cycle Label Litmus data

Test group VJLXT03.0HTR is certified using California LEV3 E10 Regular Gasoline, for which City and Highway Litmus thresholds and test values are not calculated in the EPA EV-CIS system.

For this Test Group Litmus Values and Thresholds have been calculated off-line, using tests carried out using EPA Tier 2 Low Sulphur Gasoline.

For this test group the litmus test indicates that vehicle specific 5-cycle fuel economy testing is required.

3DRTT408\_4 bag Litmus and FE - 2024 - new 20F RLM

|                                                  |            |                                              |                                     |                                                       |           |
|--------------------------------------------------|------------|----------------------------------------------|-------------------------------------|-------------------------------------------------------|-----------|
| EDV/FEDV input data: 3DRTT408                    |            | Vehicle-Specific 5-Cycle FE:<br>\$600.114-12 | Litmus<br>threshold<br>\$600.115-11 | Derived 5-Cycle FE:<br>(MPG-Approach)<br>\$600.210-12 |           |
| Normal temperature FTP75:                        |            | 5-Cycle City Label:                          |                                     | MPG-Approach City Label:                              |           |
| C6 2023-10-20 05                                 |            | Start FC (City)                              | 0.0032047                           | City Intercept                                        | 0.004091  |
| UDDS Bag 1 <sub>75</sub> FE                      | 20.1840    | Running FC (City)                            | 0.0520705                           | City Slope                                            | 1.1601    |
| UDDS Bag 2 <sub>75</sub> FE                      | 21.1550    | 5-cycle City FE Adj/U nmd                    | 16.3726                             | 5-cycle City FE Adj/U nmd                             | 17.4500   |
| UDDS Bag 3 <sub>75</sub> FE                      | 23.5520    | 5-cycle City Litmus value                    | 16.4                                | 5-cycle City FE Adj/Rnd                               | 17.4      |
| UDDS Bag 4 <sub>75</sub> FE                      | 21.8910    | City Label                                   | 16                                  | City Label                                            | 17        |
| FE total Unrounded                               | 21.7630    |                                              |                                     |                                                       |           |
| FE RND (EPA)                                     | 21.8       |                                              |                                     |                                                       |           |
| Cold Temperature FTP20:                          |            | 5-Cycle Highway Label:                       |                                     | MPG-Approach Highway Label:                           |           |
| 09 July 2024 JLR L462 T1408 FTPE PA 75.3 Bag Eng |            | Start FC (Highway)                           | 0.0002190                           | Highway Intercept                                     | 0.003191  |
| UDDS Bag 1 <sub>20</sub> FE                      | 14.7549    | Running FC (Highway)                         | 0.0429925                           | Highway Slope                                         | 1.2945    |
| UDDS Bag 2 <sub>20</sub> FE                      | 16.6003    | 5-cycle Highway FE Adj/U nmd                 | 20.9435                             | 5-cycle Highway FE Adj/U nmd                          | 22.3141   |
| UDDS Bag 3 <sub>20</sub> FE                      | 20.1698    | 5-cycle Highway Litmus value                 | 20.9                                | 5-cycle Highway FE Adj/Rnd                            | 22.3      |
|                                                  |            | Highway Label                                | 21                                  | Highway Label                                         | 22        |
|                                                  |            |                                              |                                     |                                                       |           |
| FE RND (EPA)                                     | 16.9853    |                                              |                                     |                                                       |           |
| Highway Fuel Economy Test:                       |            |                                              |                                     | FEDV U S06 testing required                           |           |
| C6 2023-10-20 06                                 |            |                                              |                                     | Start FC (Highway)                                    | 0.0002285 |
| HFET FE Unmd                                     | 31.1380    |                                              |                                     | Running FC (Highway)                                  | 0.0429280 |
| FE RND (EPA)                                     | 31.1       |                                              |                                     | 3-cycle Highway FE                                    | 21        |
|                                                  |            |                                              |                                     |                                                       |           |
| Supplemental FTP:                                |            |                                              |                                     |                                                       |           |
| U S06                                            |            |                                              |                                     |                                                       |           |
| C6 2023-10-20 07                                 |            |                                              |                                     |                                                       |           |
| US06 City FE                                     | 11.4       |                                              |                                     |                                                       |           |
| US06 Highway FE                                  | 22.4       |                                              |                                     |                                                       |           |
| US06 FE RND                                      | 18.5       |                                              |                                     |                                                       |           |
| SC03                                             |            |                                              |                                     |                                                       |           |
| C6 2023-10-23 06                                 |            |                                              |                                     |                                                       |           |
| SC03 FE RND                                      | 17.3       |                                              |                                     |                                                       |           |
|                                                  |            |                                              |                                     |                                                       |           |
| Start Fuel:                                      |            |                                              |                                     |                                                       |           |
| Start Fuel <sub>75</sub>                         | 0.03170401 |                                              |                                     |                                                       |           |
| Start Fuel <sub>20</sub>                         | 0.0655027  |                                              |                                     |                                                       |           |

**17. California ARB Information****17.1. Statements**

Vehicles covered by this application are not fitted with defeat devices.

All AECDs used on vehicles covered by this application are declared and described in section 16 of the application.

Test and production vehicles covered by this application do not use multiple maps in the engine management system. Modes used on chassis dynamometer provide identical behavior to the vehicle on the road.

Vehicles covered by this application do not use transmission calibrations which interact with the engine management or emission control systems in order to assist engine or catalyst warm-up.

The transmission calibration does not include different modes for on-road and dynamometer operation. Transmission behavior is identical in both cases. Also refer to Common Section, Section 17.

Jaguar Land Rover attests that NMOG+NO<sub>x</sub> and CO exhaust emissions for vehicles tested using the SC03 test procedures incorporated in the "California 2026 and Subsequent Model Year Criteria Pollutant Exhaust Emission Standards and Test Procedures for Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles", comply with the standards in 13 CCR 1961.4.(d)(4).

Vehicles in this test group are not part of JLR's phase in for Quick drive-away as set forth in 13 CCR 1964.1(d)(2)(C)1(a))

Vehicles in this test group are not part of JLR's phase in for Partial Soak as set forth in 13 CCR 1964.1(d)(2)(B)1)

**17.2 Fill Pipe Specification**

Refer to Common Section, Section 17

**17.3 Projected Sales**

Refer to Common Section, Section 16, Confidential Information

**17.4 Evaporative Emission Deterioration****17.4.1. Evaporative Family Identification**

Evaporative Family: VJLXR0175P1B

Evaporative Code: D7u-15

Vehicle models: Discovery

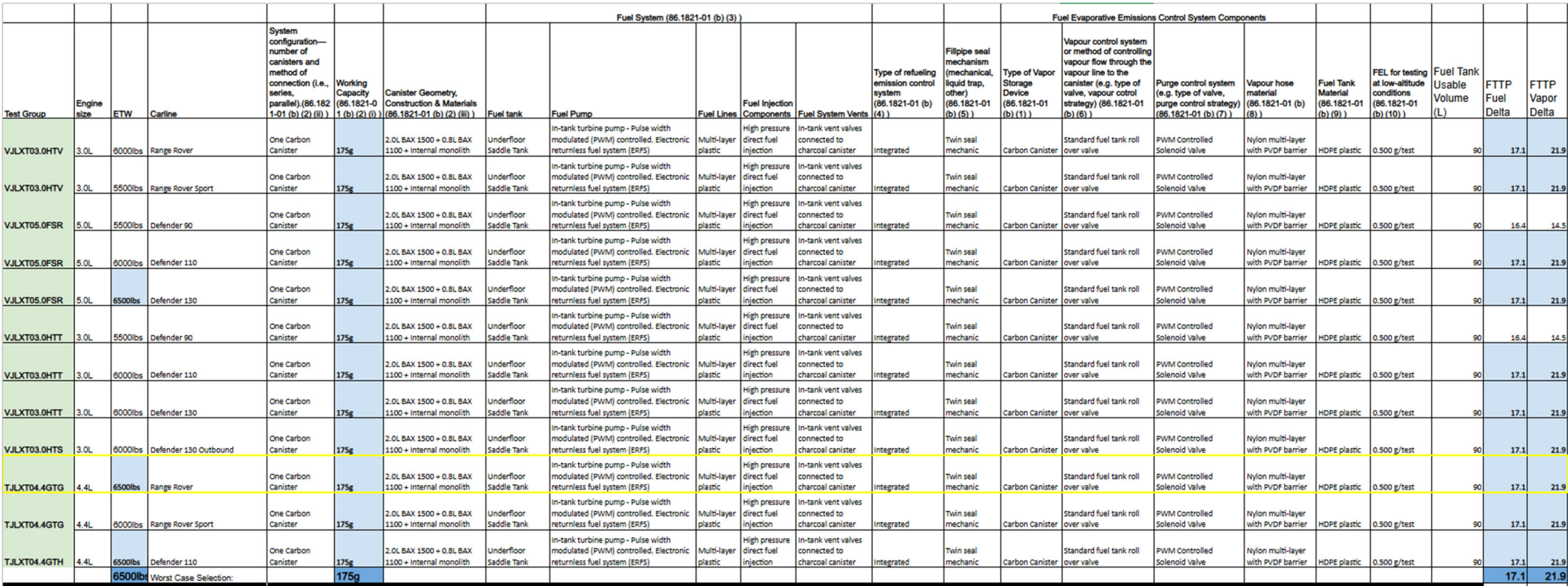
**17.4.2. Parameters of Evaporative Family. Refer to Common Section, Sect. 3**

### 17.4.3 Selection of Emission Data Vehicle and Durability Data Vehicle for Evaporative Emissions testing

#### 17.4.3.1. Worst Case Selection

Worst Case selection is carried out according to the provisions in 40 CFR § 86.1828-01 (b)(3). Using good engineering judgment, JLR believe carry-across data are representative of a worst case vehicle. The worst-case vehicle selection is highlighted in yellow in the table on the next page.

Canister size, canister material, fuel tank material, purge strategy and flow rates and refueling characteristics are common between all vehicles within the evaporative family.



## 17.4.3.2. Test Vehicle Description for Evaporative EDV and DDV

|                               |                                  |
|-------------------------------|----------------------------------|
| Vehicle Identification Number | 3KMVP032                         |
| Evaporative Emission Code     | MLA-22                           |
| Model                         | Range Rover                      |
| Emission Control System:      | 2WR-HO2S/2TWC/2HO2S/DFI/2TC/2CAC |
| Displacement                  | 4395 cm <sup>3</sup>             |
| Engine Code                   | 4.4NC10-22                       |
| Evaporative Family            | PJLXR0175P1B                     |
| Equivalent Test Weight        | 6500 lb.                         |
| Actual Vehicle Weight         |                                  |
| Curb Weight                   | 5705 lb.                         |
| Drive Axle Weight             | 3505 lb.                         |
| Air Conditioning              | Yes                              |
| Transmission Type             | S8                               |
| Transmission Code             | 8HP76                            |
| Axle Ratio                    | 3.31                             |
| N/V Ratio                     | 22.9                             |
| Tire Manufacturer             | Pirelli                          |
| Tire Size                     | 285/45R22                        |

## 17.4.5.2.2. EPA Fuel Tank Temperature Profile and Ambient Conditions

The temperature correction was performed in accordance with Federal Evaporative Emission Standards and Test Procedures using the following equation:

$$T_{i, \text{profile}} = T_i - T_o$$

**T<sub>i</sub>** is the series of observed liquid fuel temperature during the drive (°F) where i is the incremental measurement in time

**T<sub>o</sub>** is the liquid fuel temperature observed at the start of the specified driving schedule (°F).

**T<sub>i, profile</sub>** is the series of temperatures that comprise the relative temperature profile for table of T<sub>i</sub> refer to Enclosure 1 of Section 12.

## 17.4.6. Test Results for Evaporative Emissions

## 17.4.6.1 Enhanced Evaporative Emissions Test

## 17.4.6.1.1. Test Results of Durability Data Vehicle, Calculation of Evaporative Emission and Running Losses Deterioration Factor

|                                     |                     |                    |                    |
|-------------------------------------|---------------------|--------------------|--------------------|
| 4 000 (Set A)                       | 0.251               | 0.000508           | 0.073              |
| 4 000 (Set B)                       | 0.276               | 0.000524           | 0.004              |
| 150 000 (Set A)                     | 0.256               | 0.000452           | 0.0263             |
| 150 000 (Set B)                     | 0.229               | 0.000523           | 0.0171             |
| <b><u>Average Values</u></b>        |                     |                    |                    |
| 4 000                               | 0.2635              | 0.000516           | 0.0382             |
| 150 000                             | 0.2425              | 0.0004875          | 0.0217             |
| <b><u>Deterioration factors</u></b> | <b><u>0.000</u></b> | <b><u>0.00</u></b> | <b><u>0.00</u></b> |

## 17.4.6.1.2. Test Results of Emission Data Vehicle

| 4K Evaporative Emission Test Data |                   | Deterioration Factors | Compliance with Std. | Standard | Unit  |
|-----------------------------------|-------------------|-----------------------|----------------------|----------|-------|
| Test Vehicle Model                | Range             |                       | Test Data + DF       |          |       |
| Test Vehicle id                   | Rover<br>3KMVP032 |                       |                      |          |       |
| 3-Diurnal SHED Test               | 0.3095            | 0.000                 | 0.3095               | 0.500    | g     |
| Running Loss Test                 | 0.000516          | 0.00                  | 0.000516             | 0.05     | g/mi. |
| Refueling Test                    | 0.0382            | 0.00                  | 0.0382               | 0.2      | g/gal |

### Method for Calculation of CO<sub>2</sub> Equivalent Value & GHG score:

CO<sub>2</sub>-Equivalent Value =

$$\text{CO}_2 + (296 \times \text{N}_2\text{O}) + (23 \times \text{CH}_4) - \text{A/C Direct Emissions Allowance} - \text{A/C Indirect Emissions Allowance}$$

Where:

A/C-direct is credit for "Low leak" A/C system

A/C-indirect is credit for "Improved system"

Fuel Adjustment Factor = 1.0 (gasoline)

CO<sub>2</sub> equivalent emissions values calculated according to 3(a)(1)(A) of the CALIFORNIA ENVIRONMENTAL PERFORMANCE LABEL SPECIFICATIONS FOR 2009 AND SUBSEQUENT MODEL YEAR PASSENGER CARS, LIGHT-DUTY TRUCKS, AND MEDIUM-DUTY PASSENGER VEHICLES Adopted: May 2, 2008 and Title 13, California Code of Regulations, Section § 1961.1(a)(1)(B)

Global Warming Scores are selected from the table in 3(c) in the same section.

Smog score for Test Group VJLXT03.0HTR = 6 (LEVIV SULEV30)

### Environmental Performance Label

Jaguar Land Rover products for the 2027 Model Year will be fitted with labels which indicate the results obtained from the Federal Fuel Economy and Greenhouse Gas Emissions testing program in lieu of separate California labels.

Jaguar Land Rover Ltd hereby states that labels fitted to vehicles covered by this application comply with all relevant Federal specifications for Material, Color, and Label Format Requirements described in 40CFR Parts 85, 86 and 600, 49CFR Part 575, and related Manufacturer Guidance issued by the US Environmental Protection Agency and the National Highway Traffic Safety Administration.



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**Discovery****Part 1**

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Issued: 04/24/26

17.6. Vehicle weights

17.6.1. Curb weight: 5605 lb Discovery

17.6.2. Gross vehicle weight rating: 7075 lb Discovery

17.6.3. Equivalent Test Weight: 6000 lb Discovery

**18. REVISION LOG**

| Revision No. | Revision Date | Pages Affected | Description of Revision |
|--------------|---------------|----------------|-------------------------|
|              |               |                |                         |
|              |               |                |                         |
|              |               |                |                         |
|              |               |                |                         |