### California Environmental Protection Agency

**⊘** Air Resources Board

GENERAL MOTORS LLC. Executive Order: A-006-2005

New Passenger Cars, Light-Duty Trucks and

Medium-Duty Vehicles

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Pursuant to the authority vested in the Air Resources Board by Health and Safety Code (HSC), Division 26, Part 5, Chapter 2; and pursuant to the authority vested in the undersigned by HSC Sections 39515 and 39516 and Executive Order G-14-012;

IT IS ORDERED AND RESOLVED: The following exhaust and evaporative emission control systems produced by the manufacturer are certified as described below. Production vehicles shall be in all material respects the same as those for which certification is granted.

|   |                        |         |          |                 |         |             | TEST GRO                | UP                                       | iNi | FORI | MATION  |                 | 10.00                |            |            |                               |  |
|---|------------------------|---------|----------|-----------------|---------|-------------|-------------------------|--|-----|------|---|-----------------|----------------------|------------|------------|-------------------------------|--|
| MOD   |                        | TEST G  | ROUP     |                 | VEI     | HICLE       | CLASS(E                 | S)                                       |     |      | FUEL CATEGORY   |                 |                      |            | FUEL TYPE  |                               |  |
| 201   | 2016 GGMXD06.0395 MDV4 |         |          |                 |         | DV4         | FLEX-FUEL VEHICLE (FFV) |  |     | 8    | 85% ETHANOL, GASOLINE   |                 |                      |            |            |                               |  |
| USEFUL LIFE (miles) VEHICLE EMISSIC             |                        |         |          |                 |         | ION         | C                       | ATEC                                     | ORY |      | INTERIM / IN  | ΤE              | ERMEDIATE IN-USE STD |            |            |                               |  |
| EX  | H/ORV                  | R       | EVAP     | ,               |         | FT          | P                       |  |     | SF   | TP  | Γ               | FTP                  |            |            | SFTP                          |  |
| 1   | L50000                 |         | 15000    | 0               | LE      | v3 U        | LEV250                  | US                                       | 06  | , sc | CV (FULL<br>CO3, FTP<br>CYCLE)                                  |                 | NMOG+NO              | ĸ          | : NMOG+NOX |                               |  |
| SP  | ECIAL                  | FEATUR  |          | KHAUS<br>STEMS  |         | SSION       | CONTRO                  | L  |     |      | OBD S   | TA <sup>-</sup> | TUS                  |            | ENGINE     | DISPLACEMENT (L)              |  |
| 1   |                        | 21      | WC, IW   | С, 2Н           | D2S (2) | , SF        | I                       |  | 1   |      | FULL  | A               | LL MODELS            | 71         |            |                               |  |
| *   |                        |         |          | *               |         |             |                         |  | 11  | P    | ARTIAL  |                 | *                    |            | 6.0        |                               |  |
| *   |                        |         |          | *               |         |             | 1101 1424               | ****                                     |     |      | TIAL WITH   |                 | *                    |            |            |                               |  |
|   |                        |         | Е        | VAPO            | RATIVE  | E & RI      | FUELING                 | (EV                                      | /AF | P/OR | VR) FAMILY  | / IN            | IFORMATION           | 1          |            |                               |  |
| EV  | AP / OF                | RVR FAI | VILY     | EVA             | PORAT   | ΓIVE S      | STD CATE                | CATEGORY EVAP EMISSION STD VEHICLE CLASS |     |      | SPECIAL FEATURES  |                 |                      |            |            |                               |  |
|   | GGMXF                  | 017686  | 0        |                 |         | LEV         | 7 2                     |  |     |      | MI  | v4              |                      |            | *          |                               |  |
|   | GGMXR                  | 022384  | 1        |                 |         | LEV         | 7 2                     |  |     | ME   | MDV4  |                 |                      | *          |            |                               |  |
|   |                        |         | <u> </u> |                 |         | EM          | IISSION C               | RED                                      | ΙT  | INFC | RMATION   |                 |                      |            |            |                               |  |
|   |                        | ALLOV   | VANCE F  | OR TE           | ST GR   | OUP         |                         |  |     |      | CREDIT FO   |                 |                      | CREDIT FOR |            | OPTIONAL EXH.<br>STD FOR WORK |  |
| BAS   | SELINE                 | PZEV    | А        | T PZEV          | /       |             | TZEV                    | 1  | 10  | N-PZ | EV ZERO-E   | VA              | P De                 | OR         | <b>L</b>   | TRUCKS                        |  |
|   | * * *                  |         |          |                 |         |             |                         |  | N   |      | :   | N               |                      | N          |            |                               |  |
|   |                        |         |          |                 | NIV     | IOG A       | ND FLEET                | ΓAV                                      | ΈF  | RAGE | INFORMA   | TIC             | N                    |            |            |                               |  |
| NMOG RAF CH4 RAF FTP NMOG/NMF<br>RATIO (GASOLII |                        |         |          | HCHO/NMHC RATIO |         | PC+LDT (0-3 |                         | OX FLEET STD<br>(0-3750 LVW)<br>(g/mi)   |     |      | NMOG+NOX FLEET STD<br>LDT (3751 LVW-8500<br>GVWR) + MDPV (g/mi) |                 |                      |            |            |                               |  |
|   | *                      | *       |          | 1.              | 10      |             |                         | *  |     | * *  |   |                 | *                    |            |            |                               |  |

See the Attachment for Vehicle Models, Evaporative Family, Engine Displacement, Emission Control Systems, Phase-In Standards, OBD Compliance, Emission Standards and Certification Levels, and Abbreviations.

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### BE IT FURTHER RESOLVED:

The exhaust and evaporative emission standards and the certification emission levels for the listed vehicles are as listed on the Attachment. Compliance with the 50° Fahrenheit testing requirement may have been met based on the manufacturer's submitted compliance plan in lieu of testing. Any debit in the manufacturer's NMOG+NOx and greenhouse gas Fleet Average (PC or LDT or MDPV) or "Vehicle Equivalent Credit" (MDV) compliance plan shall be equalized as required.

#### BE IT FURTHER RESOLVED:

For the listed vehicle models, the manufacturer has attested to compliance with Title 13, California Code of Regulations, (13 CCR) Sections 1965 [emission control labels], 1968.2 [on-board diagnostic, full or partial compliance], 2035 et seq. [emission control warranty], 2235 [fuel tank fill pipes and openings] (gasoline and alcohol fueled vehicles only), and "High-Altitude Requirements" and "Inspection and Maintenance Emission Standards" (California 2015 and Subsequent Model Criteria Pollutant Exhaust Emission Standards and Test Procedures and 2017 and Subsequent Model Greenhouse Gas Exhaust Emission Standards and Test Procedures for PC, LDT and MDV).

Vehicles certified under this Executive Order shall conform to all applicable California emission regulations.

The Bureau of Automotive Repair will be notified by copy of this Executive Order.

Executed at El Monte, California on this \_\_\_\_\_\_ day of August 2015.

Annette Hebert, Chief

Emissions Compliance, Automotive Regulations and Science Division

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### **ATTACHMENT**

## EXHAUST AND EVAPORATIVE EMISSION STANDARDS AND CERTIFICATION LEVELS

|                            | AND ACRES ATION LEVEL A CETA  | INAMET FORE COOK     |
|----------------------------|-------------------------------|----------------------|
| EXHAUST EMISSION STANDARDS | AND CERTIFICATION LEVELS (FTP | , HWFE1, 50°F, 20°F) |

CH4: methane; NMOG: non-CH4 organic gas; HC: hydrocarbon; NMHC: non-CH4 HC; CO: carbon monoxide; NOx: oxides of nitrogen; HCHO: formaldehyde; PM: particulate matter; RAF: reactivity adjustment factor; 2DHS/3DHS [g HC/test]: 2/3 days diurnal+hot-soak; RL [g HC/mi]: running loss; ORVR [g HC/gallon dispensed]: on-board refueling vapor recovery; g: gram; mg: milligram; mi: mile; K: 1000 miles; F: degrees Fahrenheit; FTP: federal test procedure; SFTP: supplemental FTP

### **FUEL TYPE**

| 4-14-C. G. S. S. S. |   |      |                  |              |           |       |           |           |          |       |          |
|---------------------|---|------|------------------|--------------|-----------|-------|-----------|-----------|----------|-------|----------|
|                     |   |      | G+NOx<br>mi)     |              | O<br>mi)  |       | Ox<br>mi) | HC<br>(mg |          | 1     | M<br>mi) |
| 3368.50             |   | CERT | STD              | CERT         | STD       | CERT  | STD       | CERT      | STD      | CERT  | STD      |
| FTP@50K             | *   | *    | *                | *            | *         | *     | *         | *         | *        | *     | *        |
| FTP@UL              | GASOLINE-<br>LEV3 E10<br>(TIER 3 E85<br>(85% ETHANOL<br>+ 15% TIER 3<br>E10 GAS)) | ,    | 0.250<br>(0.250) | 1.7<br>(1.7) | 6.4 (6.4) | * (*) | * (*)     | * (2)     | 6<br>(6) | * (*) | 0.06     |
| 50°F @4K            | *   | *    | *                | *            | *         | *     | *         | *         | *        |       |          |

|             |   |                  |               | A 2 40 10 K | A STATE OF THE PARTY OF THE PAR |  |
|-------------|---|------------------|---------------|-------------|--|--|
|             | FUEL TYPE   | NMOG+N           | lOx (g/mi)    | CO (g/mi)   |  |  |
|             | FUEL TYPE   | CERT             | STD           | CO (g       | STD  |  |
| HWFET @ 50K | *   | *                | *             |             |  |  |
| HWFET @ UL  | GASOLINE-LEV3 E10<br>(TIER 3 E85 (85% ETHANOL + 15% TIER 3 E10<br>GAS)) | 0.083<br>(0.087) | 0.250 (0.250) |             |  |  |
| 20°F @ 50K  | * .   |                  |               | *           | *  |  |

# SFTP EXHAUST EMISSION STANDARDS AND CERTIFICATION LEVELS

|       |                       |      |                    | US06         |  | SC0                | 3            | CON                | POSITE       |               |
|-------|-----------------------|------|--------------------|--------------|--|--------------------|--------------|--------------------|--------------|---------------|
|       | FUEL TYPE             |      | NMOG+NOx<br>(g/mi) | CO<br>(g/mi) | PM<br>(mg/mi)  | NMOG+NOx<br>(g/mi) | CO<br>(g/mi) | NMOG+NOx<br>(g/mi) | CO<br>(g/mi) | PM<br>(mg/mi) |
| 0.414 |                       | CERT | *                  | *            | 经行动的   | *                  | *            | 学校发生。第.            |              | \$100 m       |
| @ 4K  | *                     | STD  | *                  | *            | en de la companya de | *                  | *            | Assist was pr      |              |               |
|       |                       | CERT | *                  | *            | *  | *                  | *            | 0.145              | 3.1          | *             |
| @ UL  | GASOLINE-<br>LEV3 E10 | STD  | *                  | *            | *  | *                  | *            | 0.800              | 22.0         | *             |
|       | LEVS EIG              | BIN  |                    |              |  |                    |              | *                  |              |               |

### WHOLE VEHICLE EVAPORATIVE EMISSION STANDARDS AND CERTIFICATION LEVELS

|                    |                                  |      | WHOLE        | VEHICLE | EVAPORA | TIVE TESTII   | NG   |         |          |  |
|--------------------|----------------------------------|------|--------------|---------|---------|---------------|------|---------|----------|--|
| EVAPORATIVE FAMILY | FUEL TYPE                        | 3DH  | S (g/test) ( | @ UL    | 2D      | HS (g/test) ( | D UL | RL (g/n | ni) @ UL |  |
|                    |                                  | CERT | STD          | FEL     | CERT    | STD           | FEL  | CERT    | STD      |  |
| GGMXF0176860       | GASOLINE-<br>LEV3 E10            | 0.41 | 1.00         | *       | 0.30    | 1.25          | *    | 0.00    | 0.05     |  |
| GGMXR0223841       | E10-EPA                          | 0.65 | 1.00         | *       | 0.45    | 1.25          | *    | 0.00    | 0.05     |  |
| GGMXR0223841       | GASOLINE -<br>TIER 2<br>UNLEADED | 0.71 | *            | *       | 0.65    | *             | *    | 0.00    | . *      |  |

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| ORVR / FUI         | EL ONLY / CA         | NISTER    | BLEED | <b>EVAPORATIVE</b>              | EMISSION | STANDA            | RDS AND | CERTIFICA         | ATION LEV                            | ELS |  |  |
|--------------------|----------------------|-----------|-------|---------------------------------|----------|-------------------|---------|-------------------|--------------------------------------|-----|--|--|
|                    |                      |           |       | FUEL ONLY EVAP & CANISTER BLEED |          |                   |         |                   |                                      |     |  |  |
| EVAPORATIVE FAMILY | ORVR (g/g            | gallon) @ | ) UL  | FUEL TYPE                       | 1        | IG TEST<br>) @ UL |         | IG TEST<br>) @ UL | BLEED CANISTER<br>TEST (g/test) @ 4K |     |  |  |
|                    | FUEL TYPE            | CERT      | STD   | :                               | CERT     | STD               | CERT    | STD               | CERT                                 | STD |  |  |
| GGMXR0223841       | GASOLINE -<br>TIER 2 | 0.03      | 0.20  | *                               | *        | *                 | *       | *                 | *                                    | *   |  |  |

: not applicable; #: pounds; UL: useful life; PC: passenger car; LDT: light-duty truck; LDT1: LDT<6000#GVWR,0-3750#LVW; LDT2: LDT<6000#GVWR.3751-5750#LVW: LDT3: LDT 6001-8500#GVWR.3751-5750#ALVW: LDT4: LDT 6001-8500#GVWR.5751-8500#ALVW; MDV; medium-duty vehicle; MDV4: MDV 8501-10000#GVWR; MDV5; MDV 10001-14000#GVWR; MDPV; mediumduty passenger vehicle; HDV: heavy-duty vehicle; ECS: emission control system; CERT: certification; STD: standard; FEL: family emission limit; GVWR: gross vehicle weight rating; LVW: loaded vehicle weight; ALVW: adjusted LVW; LEV: low emission vehicle; ULEV: ultra LEV; SULEV: super ULEV; ZEV: zero-emission vehicle; PZEV: partial ZEV; AT PZEV: advanced technology PZEV; TZEV: transitional ZEV: TWC/OC: 3-way/oxidizing catalyst; ADSTWC: adsorbing TWC: HAC: HC adsorbing catalyst; WU: warm-up catalyst; NAC: NOx adsorption catalyst; SCR-U or SCRC/SCR-N or SCRC-NH3: selective catalytic reduction-urea/ammonia; NH3OC: ammonia oxidation catalyst; CTOX/PTOX: continuous/periodic trap oxidizer; DPF: diesel particulate filter (active); GPF: PM filter for spark-ignited engine; HO2S/O2S: heated/oxygen sensor; WR-HO2S or AFS: wide range/linear/heated air-fuel ratio sensor; NOXS: NOx sensor; PMS: PM sensor; RDQS: reductant quality sensor; NH3S: ammonia sensor; EGR: exhaust gas recirculation; EGRC: EGR cooler; AIR/AIRE: secondary air injection (belt driven)/(electric driven); PAIR: pulsed AIR; SFI/MFI: sequential/multiport fuel injection; DFI/IFI: direct/indirect fuel injection; TC/SC: turbo/super charger; CAC: charge air cooler; F/P/\$: full/partial/partial with fines on-board diagnostic; DOR: direct ozone reducing; HCT: hydrocarbon trap; BCAN: bleed carbon canister; prefix 2: parallel; (2) suffix: series; CNG/LNG: compressed/liquefied natural gas; LPG: liquefied petroleum gas; E85: "85%" ethanol ("15%"gasoline) fuel; E10: "10%" ethanol ("90%"gasoline) fuel; A: automatic (with lockup); M: manual transmission; SA: semi-automatic transmission; CV: continuously variable transmission; SCV: selectable continuously variable transmission; AM: automated manual transmission; AMS: automated manual-selectable transmission; OT: other transmission

### 2016 MODEL YEAR: VEHICLE MODELS INFORMATION

| MAKE      | MODEL                           | VEH CLASS | ENGINE<br>(L) | TRANS TYPE | EVAPORATIVE<br>FAMILY | EXH | OBD | PZEV TYPE |
|-----------|---------------------------------|-----------|---------------|------------|-----------------------|-----|-----|-----------|
| CHEVROLET | G2500 EXPRESS<br>2WD CARGO      | MDV4      | 6.0           | <b>A</b> 6 | GGMXR0223841          | 1   | F   | *         |
| CHEVROLET | G2500 EXPRESS<br>2WD PASS       | MDV4      | 6.0           | A6         | GGMXR0223841          | 1   | F   | *         |
| CHEVROLET | G3500 EXPRESS<br>2WD CARGO      | MDV4      | 6.0           | A6         | GGMXR0223841          | 1   | F   | *         |
| CHEVROLET | G3500 EXPRESS<br>2WD CUTAWAY CH | MDV4      | 6.0           | <b>A</b> 6 | GGMXF0176860          | 1   | F   | *         |
| CHEVROLET | G3500 EXPRESS<br>2WD PASS       | MDV4      | 6.0           | <b>A</b> 6 | GGMXR0223841          | 1   | F   | *         |
| GMC       | G2500 SAVANA<br>2WD CARGO       | MDV4      | 6.0           | A6         | GGMXR0223841          | 1   | F   | *         |
| GMC       | G2500 SAVANA<br>2WD PASS        | MDV4      | 6.0           | <b>A</b> 6 | GGMXR0223841          | 1   | F   | *         |
| GMC       | G3500 SAVANA<br>2WD CARGO       | MDV4      | 6.0           | <b>A</b> 6 | GGMXR0223841          | 1   | F   | *         |
| GMC       | G3500 SAVANA<br>2WD CUTAWAY CH  | MDV4      | 6.0           | <b>A</b> 6 | GGMXF0176860          | 1   | F   | *         |
| GMC       | G3500 SAVANA<br>2WD PASS        | MDV4      | 6.0           | A6         | GGMXR0223841          | 1   | F   | *         |