

## Attachment D Running Change/Field Fix Examples

### Running Change/Field Fix Notification Example:

Dear [OBD staff member's name here],

**Purpose:**

This email is to notify the California Air Resources Board of Manufacturer ABC's running change and field fix (RC/FF ABC-123) for the following product(s):

<b>Model Year</b>	<b>Model</b>	<b>Engine Family</b>
2019	KAB123	KABCD0123EFG
2019	GPS987	KABCD0234HIJ

To the best of Manufacturer ABC's knowledge, this running change/field fix does not compromise the compliance of the HD OBD system with title 13, CCR section 1971.1.

**Summary:**

The running change/field fix consists of the following changes:

- 1) Changes to the malfunction criterion and enable conditions for the NOx catalyst conversion efficiency monitor (DTC 4364.31) to address issues with false fails found in in-use vehicles,
- 2) A change to the enable conditions for the EGR system low flow monitor (DTC 3058.18) to address issues with false fails found in in-use vehicles, and
- 3) Changes to the time required to detect a malfunction for the DOC intake temperature sensor out-of-range low monitor (DTC 4765.21) and the DOC temperature sensor rationality monitor (DTC 4765.2) to improve monitoring performance.

The running change/field fix document with the full details of running change/field fix RC/FF ABC-123 will be submitted at the end of the month.

Sincerely,

Ms. Jane Smith  
Manufacturer ABC OBD Certification Representative

## Running Change/Field Fix Document: Revised HD OBD Summary Table Example

Engine Family								
KABCD0123EFG								
Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL illum.
NOx Catalyst	4364.31	Conversion Efficiency Emission Threshold	Average conversion efficiency	< 70 85	Exhaust flow rate	< 350 400 g/s	10 sec	2 trip
					Engine speed	<= 3000 3100 RPM		
					ECM voltage	<= 12 14.0 V		
EGR System	3058.18	Low Flow Emission Threshold	Delta between Estimated EGR and EGR flow	> 2.5 kg/min	EGR flow	> 2 4 kg/min	100 sec	2 trips
					EGR flow	<10 kg/min		
					Flow area	> 2 cm <sup>2</sup>		
					Flow area	<120 cm <sup>2</sup>		
					Total fueling	> 45 50 mg/stroke		
Total fueling	<300 mg/stroke							
Aftertreatment DOC Intake Temperature Sensor								
Out-of-Range High	4765.2	DOC intake temperature drifted high	DOC intake temperature	> 1100 degC	Keyswitch	On	15 sec	2 trips
			Intake gas temperature voltage	< 3 V				
			Intake gas temperature thermocouple impedance	< 5000 Ohms				
Out-of-Range Low	4765.21	DOC intake temperature drifted low	DOC intake temperature	<-60 degC	Keyswitch	On	15 9 sec	2 trips
			Intake gas temperature voltage	> 1 V				
Rationality Low and High	4765.2	DOC intake temperature	DOC intake temperature - DOC outlet temperature	>65 degC	Elapsed time since last regeneration event	>500 sec	200 30 sec	2 trips
		data erratic intermittent or incorrect	DOC intake temperature - DOC outlet temperature	<-60 degC				

## Running Change/Field Fix Document: Revised DDV/DDE Data Example

The modifications to the NO<sub>x</sub> catalyst conversion efficiency monitor (DTC 4364.31) due to running change/field fix (RC/FF) ABC-123 will result in changes to the DDE emission test data. The original and updated DDE test data are provided below.

Test engine: model KAB123 from engine family KABCD0123EFG

Original DDE Test Part: SCR catalyst oven aged @ XXX degC for YYY hours

RC/FF DDE Test Part: SCR catalyst oven aged @ XXX degC for YYY hours

NO <sub>x</sub> Catalyst Conversion Efficiency Monitor (DTC: 4364.31)	FTP (g/bhp-hr)				Time to MIL Illumination
	NMHC	NO <sub>x</sub>	CO	PM	
Certification Standard	0.14	0.20	15.5	0.01	
OBD Threshold	0.28	0.40	N/A	N/A	
Original Baseline	0.11	0.15	5.1	0.00	
Original Baseline IRAF	0.01	0.02	0.9	0.00	
Adjusted Original Baseline	0.12	0.17	6.0	0.00	
Original DDE Test	0.13	0.19	5.9	0.00	1100 sec
Original DDE IRAF	0.02	0.10	1.2	0.01	
Adjusted Original DDE Test	<b>0.15</b>	<b>0.29</b>	<b>7.1</b>	<b>0.01</b>	
RC/FF DDE Test	0.15	0.21	6.1	0.00	1105 sec
RC/FF DDE IRAF	0.02	0.11	1.2	0.01	
Adjusted RC/FF DDE Test	<b>0.17</b>	<b>0.32</b>	<b>7.3</b>	<b>0.01</b>	
Exceeded OBD Threshold?	No	No	N/A	N/A	

NO <sub>x</sub> Catalyst Conversion Efficiency Monitor (DTC: 4364.31)	RMCSET (g/bhp-hr)				Time to MIL Illumination
	NMHC	NO <sub>x</sub>	CO	PM	
Certification Standard	0.14	0.20	15.5	0.01	
OBD Threshold	0.28	0.40	N/A	N/A	
Original Baseline	0.10	0.13	5.5	0.00	
Original Baseline IRAF	0.01	0.01	0.7	0.00	
Adjusted Original Baseline	0.11	0.14	6.2	0.00	
Original DDE Test	0.16	0.19	5.8	0.00	650 sec
Original DDE IRAF	0.01	0.09	0.7	0.01	
Adjusted Original DDE Test	<b>0.17</b>	<b>0.28</b>	<b>6.5</b>	<b>0.01</b>	
RC/FF DDE Test	0.17	0.21	6.1	0.00	651 sec
RC/FF DDE IRAF	0.02	0.10	0.9	0.01	
Adjusted RC/FF DDE Test	<b>0.19</b>	<b>0.31</b>	<b>7.0</b>	<b>0.01</b>	
Exceeded OBD Threshold?	No	No	N/A	N/A	

**Note:** In accordance with section 1971.1(i)(4.3.2)(B), the manufacturer must also include all the data required by sections 1971.1(h)(4.1) through (4.9) and (h)(5) from the original DDE tests and the RC/FF DDE tests.