“180L Pre-Production Final Overall Quality Inspection” Translation Provided by CNN

January 31, discussion with CNN:

1. There are several inaccurately translated portions and misinterpretations in the document provided by CNN to Toyota. As translated, we are not surprised that an independent engineer could interpret this document as proof of an electronic malfunction leading to unintended acceleration.

    a. We have annotated the primary inaccurate translations in CNN’s document (see page 3).

    b. The document is known as an informal, internal “reflection” summary intended to advise and remind other development teams to check for this condition.

    c. Because it is an informal, internal reflection document, the use of jargon is common.

    d. Because Japanese language is so contextual, misinterpretation by those not actually creating or using this document is possible.

    e. The term to describe the outcome of the test as “creep” is common jargon used by engineers describing the sensation felt when the brakes are released for less than a fraction of a second, immediately followed by reapplication of the brakes. The vehicle did not physically move forward.

2. This test is designed to intentionally trick Full Range ACC interaction by simulating a failed accelerator pedal sensor, when the vehicle is at a complete stop.

    a. This is a common test of the engine control fail-safe and Full Range ACC systems to ensure the Full Range ACC responds appropriately if this rare condition occurs.

3. During prototype development, all manufacturers artificially induce failure to evaluate potential scenarios, no matter how remote, to help ensure a condition does not go into production.

    a. In our opinion, this test successfully accomplished our objective by creating a condition in the prototype stage that resulted in an adjustment and refinement of the Full Range ACC before it went into production.

4. The reflection document describes a less than a fraction of a second release of the brakes by the Full Range ACC on a prototype vehicle at a complete stop and the throttle in fail-safe (limp-home) mode.

5. The test was done on a prototype vehicle, not a production vehicle.

6. The “Full Range ACC” feature is not available in the U.S. market, it is offered on vehicles sold in Japan and Europe.

    a. Unlike cruise control systems available in the U.S., Full Range ACC operates from 0 MPH to maximum desired speed.

    b. The ACC (including those models equipped with the Full Range ACC feature) disengages when the brake pedal is activated.

    c. Link to Toyota Motor Corporation Technology: http://www.toyota-global.com/innovation/safety_technology_quality/safety_technology/technology_file/active/radar.html

7. The ACC feature on Toyota’s vehicles in the U.S. is not operational until the vehicle reaches a speed of approximately 25 miles per hour.

    a. Link to Lexus Technology: http://www.lexus.com.bh/technology_explorer/adaptive_cruisecontrol_ACC.asp?Model=All

8. Since the test was done during vehicle development on a prototype vehicle, the results were used to refine the Full Range ACC before it became final and went into production.

9. The circumstances in which the Full Range ACC released the brakes for less than a fraction of a second while the prototype vehicle was in fail-safe mode are as follows:
    a. The prototype vehicle was at a complete stop while engaged in Full Range ACC mode with a vehicle in front of it;
    b. While in this state, the Electronic Control Unit (ECU) for the ACC received a short duration signal intentionally created for this test by interrupting the accelerator pedal sensor signal and causing the vehicle to go into fail-safe mode as designed;
    c. As expected due to the test methodology the ACC ECU interpreted the short duration signal as an intentional accelerator pedal command;
    d. At that point, the vehicle began to release the brakes;
    e. However, once the short signal ended, the Full Range ACC continued to detect the vehicle in front and instantaneously reengaged the brakes ;
    f. This entire sequence occurred in less than a fraction of a second;
    g. At no point did the vehicle physically move forward.

(Additional explanations to the original document provided by CNN)

180L pre-production final overall quality inspection

Confi-dential

Detail from Electrical Engineering (Part 1)

An **Overall Inspection of Communication Fail-Safes** procedure is now mandated for the 180L in order to prevent the reoccurrence of the problem that occurred in the 250L, in which the cruise control activates by itself at full throttle when the accelerator pedal position sensor is abnormal.*1

*Do the point-by-point inspection only on the CAN communication ECU.

Inspect the signal receiving side as follows:

[Step 1] On the receiving side, find data possibly indicating error operation or misdiagnosis.

[Step 2] Check the extracted data against the the data master.

[Step 3] When you are unsure of data for either of the following reasons, check the receiving side.

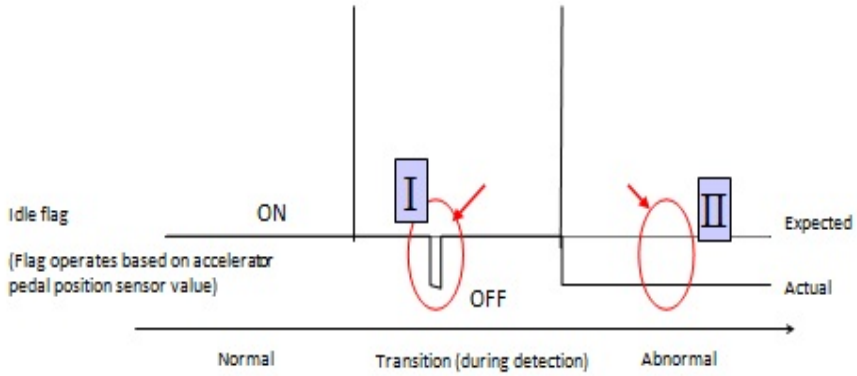
- Unclear listing
- No listing of fail-safe values (consider transition periods when anything abnormal is being detected or has been tentatively detected)

*1 The cruise control activates by itself at full throttle when the accelerator pedal position sensor is abnormal

The specification says that the transmitting side of the engine ECU is to enter idle OFF state when the accelerator pedal position sensor is abnormal (and when the pedal is fully released) (I), but the receiving side of the cruise control ECU erroneously recognizes idle ON (when the pedal is fully released) (II).

Therefore, when the accelerator pedal position sensor is abnormal, the cruise control ECU erroneously determines that the pedal was pressed, so it releases the brake and starts forward motion.

The actual data differs from what the receiving side expects



Inaccurate Translation: "at the start" is the correct statement, instead of "full throttle." The condition is when the vehicle starts to "creep" (seen in automatic transmission vehicles)" during the process the accelerator pedal sensor detects an abnormality (again, the abnormality was intentionally made).

This condition occurred when a **stress test was conducted during the development**. This translation reads as though **the condition occurred in the market, which is NOT the case.**

Inaccurate Translation: "transmission" or "sending" is correct

"Accelerator pedal is pressed" is correct: **inaccurate translation** and mistaken location of translation

Inaccurate Translation: "accelerator pedal is fully released" is correct