Request 11

Describe all modifications or changes made by, or on behalf of, Ford in the design, material composition, manufacture, quality control, supply, or installation of the subject component, from the start of production to date, which relate to, or may relate to, the alleged defect in the subject vehicles. For each such modification or change, provide the following information:

a) The date or approximate date on which the modification or change was incorporated into vehicle production;
b) A detailed description of the modification or change;
c) The reason(s) for the modification or change;
d) The part number(s) (service and engineering) of the original component.
e) The part number(s) (service and engineering) of the modified component;
f) Whether the original unmodified component was withdrawn from production and/or sale, and if so, when;
g) When the modified component was made available as a service component; and
h) Whether the modified component can be interchanged with earlier production components.

Also, provide the above information for any modification or change that Ford is aware of which may be incorporated into vehicle production within the next 120 days.

Answer

Ford understands this request to relate to the subject components which relate to, or may relate to, the alleged defect in the subject vehicles. This information can be found in the file "EA23-002 Request 11 – Parts Change Log." It is important to note that Ford has populated the Parts Change Log where possible and to the best of its ability. Given some variances, it is possible that components were installed in vehicles before or after the dates listed for "Incorporated into Vehicle Production" and "Removed from Vehicle Production" in the Parts Change Log. The parts noted in the Parts Change Log are not consumed by the assembly facilities via strictly first in, first out principles.

The Nano intake valve material was changed from "Silchrome 1" to "Silchrome Lite" in May, 2018. The Silchrome Lite material is an industry-recognized valve material with widespread usage in engine valves and is included in the Society of Automotive Engineers (SAE) Engine Poppet Valve Information Report J775_201801 material specification UNS K14072 (reference SAE International Surface Vehicle Information Report, "Engine Poppet Valve Information Report," SAE Standard J775, Rev. Jan. 2018).

As Ford advised ODI in its response to PE22-007, the design change to the Silchrome Lite material followed all Ford design and validation disciplines, including three Ford Engine Fatigue Tests which were completed as part of the material change validation process. The Engine Fatigue Test is designed to evaluate the engine's robustness to structural fatigue caused by repetitive mechanical loading at high engine speeds and high cylinder pressures. This test cycle, developed through Ford's extensive experience and long tenure manufacturing engines, is used as a basis to ensure engines of high quality, efficiency, and reasonable durability across many possible usage profiles and varied conditions. The test regime is designed to achieve at least 35 million full load cycles on the engine and includes engine speeds ranging from idle to the maximum design speed of the engine. A detailed post-analysis of the subject valves was completed, indicating passing results and meeting design goals.