



U.S. Department
of Transportation

**National Highway
Traffic Safety
Administration**

ODI RESUME

Investigation: EA 11-002
Prompted by: PE10-027
Date Opened: 01/26/2011
Investigator: Peter Ong
Approver: Frank Borris
Subject: Engine Compartment Fire

Date Closed: 02/17/2012
Reviewer: Scott Yon

MANUFACTURER & PRODUCT INFORMATION

Manufacturer: VOLKSWAGEN OF AMERICA, INC
Products: 2001-2007 Volkswagen (VW) Passat w/4 cyl. Turbo
Population: 328,724

Problem Description: Ignition coil failure may lead to engine compartment electrical fires in 4-cylinder engine, turbo equipped, Passat vehicles.

FAILURE REPORT SUMMARY

	ODI	Manufacturer	Total
Complaints:	22	113	135
Crashes/Fires:	5	37	43
Injury Incidents:	0	0	0
Fatality Incidents:	0	0	0
Other*:	9	36	45

*Description of Other: Fire reports from other ignition sources (such as battery, alternator or fuel/oil leaks, etc.)

ACTION / SUMMARY INFORMATION

Action: Close this Engineering Analysis

Summary:

In July 2010, the Agency opened PE10-027 to investigate allegations of coil on plug (COP) ignition coil fires in MY2002-2003 VW Passat vehicles. The investigation was upgraded in January 2011 to include all MY2001-2007 4-cylinder VW Passat, gasoline, turbo-charged vehicles. Based on the analysis of VW's response, and including ODI's consumer complaints, ODI has since identified 135 unique engine fire reports attributable to the COP coils. After further review of the details as contained in each report, ODI determined that 43 of the 135 fire reports were actual fire/flame incidents, 83 fire reports were thermal events (smoke, spark, heat or wire melt), and another 9 fire reports were undetermined in severity due to the lack of information. These COP coil fires were characterized as initiated from within the COP coil circuit located at the top of the engine block and below the plastic engine cover. The fires observed were contained in the engine compartment and did not reach into the passenger compartment in contrast to those caused by an overheated catalytic converter examined in ODI's investigation in 2007 and 2008. There were no reports of crashes or personal injury in this examination.

A safety-related defect has not been identified at this time and further use of agency resources does not appear to be warranted. Accordingly, this investigation is closed. The closing of this investigation does not constitute a finding by NHTSA that a safety-related defect does not exist. The agency will monitor this issue and reserves the right to take further action if warranted by the circumstances

See the Closing Report for additional details.

EA11-002 Closing Report

In June of 2003, VW recognized that reliability and safety problems existed in the COP coils. To address these problems, VW issued a service bulletin and instituted procedures for replacing the ignition coils within the vehicle's warranty period.

Despite this action, owners continued to report problems with the ignition coils, including fires in the passenger and engine compartments. In June 2007, ODI opened PE07-024 to investigate these fire reports. The agency's investigation revealed that when the ignition coil failed, fuel continued to flow into the ignition coil's corresponding engine cylinder, but the fuel in that cylinder no longer ignited creating a rich fuel mixture in the exhaust system/catalytic converter. The overheated catalytic converter could ignite surrounding insulating material located below the passenger compartment area and result in fire entering the passenger compartment/dashboard areas of the vehicle. In September 2007, PE07-024 was upgraded to EA07-014 involving 80 fire incidents. On April 7, 2008, VW initiated a recall campaign (08V-156) to address the catalytic converter fire issue. The remedy called for installing a new heat shield around the catalytic converter and reprogramming the engine management system (EMS) to shut off the fuel supply when the ignition coil misfired. To date, 73% of the affected Passat vehicles have had the remedy work performed.

ODI believes that the 08V-156 remedies effectively prevent catalytic converter fires. But the COP coils' internal circuitry continued to fail. This internal failure caused a short circuit that could potentially lead to electrical fires at the COP coils (as opposed to an overheated catalytic converter) as well as an emissions problem. In October 2009, VW addressed the emissions problem by issuing an EPA/Emission Service Action Circular (28F3) that replaced all originally installed (OEM) GEN I (generation I) COP coils with an improved GEN II COP coil. The GEN II design was introduced as the OEM coil starting in mid-MY 2007 Passat vehicles. The GEN II design improved the quality of the COP coils and decreased susceptibility to moisture penetration that could cause failures and internal short circuits. Since the EPA action replacing the original GEN I COP coils, owners have reported only 4 fires. To date, 69% of the affected Passat vehicles have had their GEN I COP coils replaced under the EPA recall. In February 2012, VW informed ODI that it intends to launch an owner re-notification campaign (both for recall 08V-156 and EPA 28F3) in early-spring to further encourage Passat owners with unremedied vehicles to get their 08V-156 recall service performed and the GEN I COP coils replaced with the GEN II design.

The following VOQs were determined to be a full-flame fire event/incidents related to the subject ignition coils:

10243901 10263560 10283274 10293321 10303623

The following VOQs were determined to be a thermal event/incident related to the subject ignition coils:

770696 10000408 10002831 10003494 10003544 10003633 10006582 10006671 10007152 10031150
10041058 10162478 10181975 10193378 10195922 10223037 10285807