



U.S. Department  
of Transportation

**National Highway  
Traffic Safety  
Administration**

# ODI RESUME

**Investigation:** EA 21-003  
**Prompted by:** Prior NHTSA Actions, VOQs  
**Date Opened:** 12/22/2021  
**Investigator:** Nathan Ong **Reviewer:** Scott Yon  
**Approver:** Stephen Ridella  
**Subject:** Engine Fires

## MANUFACTURER & PRODUCT INFORMATION

**Manufacturer:** Kia Motors America, Hyundai Motor America  
**Products:** Certain MY 2011-2016 Hyundai and Kia Models  
**Population:** 3,000,000 (Estimated)

**Problem Description:** Engine fires due to engine failure

## FAILURE REPORT SUMMARY

	ODI	Manufacturer	Total
<b>Complaints:</b>	78	N/A	N/A
<b>Crashes/Fires:</b>	78	N/A	N/A
<b>Injury Incidents:</b>	3	N/A	N/A
<b>Number of Injuries:</b>	3	N/A	N/A
<b>Fatality Incidents:</b>	0	N/A	N/A
<b>Other*:</b>	83	N/A	N/A

\***Description of Other:** Vehicle Owner Questionnaire (VOQ) reports of recall scope-related fires due to engine failure on other (non-subject) Hyundai and Kia models some of which use engines similar to those in the subject vehicles.

## ACTION / SUMMARY INFORMATION

**Action:** Open an Engineering Analysis.

### Summary:

In 2017, the Office of Defects Investigation (ODI) opened two Recall Queries (RQ17-003 and 004) following multiple recall actions initiated by Hyundai and Kia for "Theta II" engine-equipped vehicles. The RQs were opened to investigate both the timeliness and scope of the recalls as well as the compliance of each company to meet their reporting requirements established under the Motor Vehicle Safety Act. Numerous violations of the requirements were found for both companies, and in on November 20, 2020, both companies entered into Consent Orders with NHTSA to resolve NHTSA's assertions of violations of law. Both Consent Orders remain in effect.

In 2018, the Center for Automotive Safety (CAS) petitioned the Agency under Defect Petition (DP) 18-003 to investigate non-crash fires on various Hyundai and Kia models, citing 120 VOQs alleging vehicle fires at varying points of origin and occurring under various non-crash related circumstances (including key-off fires). In opening DP18-003, ODI noted that many of the 120 fire incidents appeared to originate in the engine compartment area and made reference to the two open RQ investigations as likely pertinent. ODI issued information request (IR) letters to Hyundai and Kia and several peer OEMs in its efforts to properly evaluate and disposition CAS' petition.

After reviewing responses to the DP requests, ODI granted CAS' petition and in 2019 opened two Preliminary Evaluations (PE19-003 and 19-004, one for each company) to broadly investigate incidents of non-crash fires (regardless of origin or operational status of the vehicle) on various model year Hyundai (Sonata and Santa Fe) and Kia (Optima, Sorento and Soul) models. ODI issued additional, more broadly scoped IR letters to both Hyundai and Kia, which upon review, identified certain vehicle populations exhibiting higher rates of non-crash fires for various defects and points of origin, including some due to engine failure.

To date, Hyundai and Kia have issued several recalls to address vehicle fires, including those due to engine failure involving various engine types (Theta II GDI, Theta II MPI, Theta II MPI HEV, Nu GDI, and Gamma GDI). The remedies for the engine failure recalls typically involve engine inspection (to detect existing damage), and if necessary, engine replacement. Additionally, both manufacturers are installing an engine control software modification known as Knock Sensor Detection Software (KSDS) which is intended to detect impending engine failure, alert the driver, and limit engine power (to lessen likelihood of engine failure). KSDS is being installed under recalls and non-safety field actions, and both companies have extended limited engine warranties (see recall files). They have even replaced engines if the KSDS software detects an impending engine failure.

The 78 VOQs cited above, which all involve fires likely due to engine failure, consist of 36 remedy-related and 42 scope-related incidents. The injury allegations involve eye and burn injuries not requiring medical treatment. With the 83 Other VOQs, ODI is aware of 161 fires potentially due to engine failures. The downloadable version of the resume available at [NHTSA.gov](http://NHTSA.gov) contains additional information on the recall actions and ID numbers for the VOQs.

The Office of Defects Investigation (ODI) is opening this Engineering Analysis for two primary purposes. First, the investigation will continue to evaluate the scope of recalls initially begun under prior ODI actions (see below), and will also include other recalls for fires due to engine failures, which Hyundai and Kia have subsequently launched (many influenced by ODI investigations). Second, the investigation will monitor and evaluate the efficacy of the recall remedies for engine fire related recalls, as well as the long-term viability of related programs and non-safety field actions being conducted by Hyundai and Kia.

**Attachment A: Recall actions and VOQ reports discussed in the opening resume**

The following products have been identified as displaying potential recall scope concerns: Approximately 550,000 MY 2013 Hyundai Elantra, MY 2011 Kia Sorento, and MY 2012-2015 Kia Rio. The 42 (of 78) ODI reports (VOQs) cited above on the Complaints line of the failure report summary, which involve engine fires on vehicles outside the scope of existing recalls, can be viewed at [NHTSA.gov](http://NHTSA.gov) under ODI identification numbers:

11375940, 11112279, 11057072, 10585543, 10565791, 11354799, 11329676, 11318387, 11310602, 11281705, 11245734, 11221481, 11195298, 11183368, 11149408, 11113386, 11091239, 11040984, 10991038, 10903822, 10778005, 10731649, 10701992, 10694206, 10565984, 10553953, 11424208, 11422246, 11414131, 11351493, 11217527, 11205122, 11133458, 11128568, 11115586, 11114289, 11111767, 11073341, 10991332, 10971641, 10694186, 10429442.

The following recall IDs, which involved approximately 2.5M affected vehicles, have been identified as displaying potential remedy concerns: Hyundai recalls 15V-568, 17V-226, 20V-746, and 21V-727 and Kia recalls 17V-224, 19V120, 20V-750, and 21V-844. The 36 (of 78) VOQs cited above on the Complaints line of the failure report summary, and which involved post-remedy engine fires, can be viewed at [NHTSA.gov](http://NHTSA.gov) under ODI identification numbers:

11427413, 11424490, 11424083, 11423473, 11421771, 11419822, 11418708, 11414129, 11406849, 11400256, 11399073, 11397562, 11388186, 11382825, 11377625, 11375573, 11366708, 11365053, 11360992, 11353693, 11343008, 11316182, 11303066, 11300600, 11288418, 11286465, 11279377, 11277618, 11255924, 11242062, 11231666, 11209204, 11184011, 11171259, 11170246, 11153078.

The 83 ODI reports cited above on the Other line of the failure report summary, which also involve engine fires on vehicles outside the scope of existing recalls (but are not included in the subject makes and models for this investigation), can be viewed at [NHTSA.gov](http://NHTSA.gov) under ODI identification numbers:

11438375, 11437981, 11436659, 11436605, 11436574, 11435397, 11434273, 11433980, 11433898, 11431970, 11431584, 11426895, 11426632, 11423010, 11422167, 11421680, 11421653, 11419170, 11418279, 11416535, 11403582, 11398046, 11397417, 11397349, 11395448, 11394722, 11389438, 11388862, 11387593, 11385531, 11382916, 11378220, 11362515, 11342973, 11339427, 11330054, 11324990, 11324341, 11324235, 11318304, 11309422, 11309184, 11307586, 11300596, 11288869, 11281431, 11246461, 11219948, 11219235, 11207099, 11195743, 11195592, 11191530, 11190044, 11190038, 11170791, 11170549, 11170642, 11161289, 11152866, 11151192, 11143621, 11142527, 11142194, 11141847, 11132366, 11128733, 11123010, 11120051, 11115359, 11109846, 11103080, 11089856, 11058265, 11032346, 11003679, 10994093, 10908482, 10877062, 10871900, 10838454, 10671199, 10596530