

# Hyundai Recall Campaign 257/021G

## Attachment A: Requested Chronology of Events Leading Up to Decision

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### ❖ [October 2022 – March 2023](#)

- Beginning in October 2022, HMC began examining ICCU warranty returns from various markets and noted heat damage on the low-voltage converter field effect transistor(s) (“FET”) of the ICCU assemblies equipped in certain Hyundai and Genesis electric vehicles.
- In January 2023, HMC began evaluating potential overcurrent modes in the ICCU in an attempt to replicate the FET failure(s) observed in examined warranty part returns.

### ❖ [April – September 2023](#)

- On April 24, 2023, NHTSA’s Office of Defects Investigation (“ODI”) notified NASO of certain VOQ’s received alleging a loss of motive power in a Hyundai IONIQ 5 vehicle located in the U.S. NASO held multiple discussions from April to May informing ODI of its analysis of field information and the findings of HMC’s investigation and ongoing replication testing.
- On May 17, 2023, HMC conducted vehicle driving tests to study the potential loss of power following failure of the ICCU, specifically regarding the effects of low-voltage convertor fault(s) on vehicle mobility, warning signs that precede an ICCU fault, and driving time and range following an ICCU fault. These tests were performed with the Korea Automobile Testing and Research Institute (“KATRI”). The testing results indicated that the vehicle remains operational following a low-voltage convertor fault, resulting in multiple audible and visual warnings to the driver. The results confirmed that if the vehicle continues to be driven while ignoring the warning symptoms, the vehicle will eventually lose all motive power. The test results also confirmed that the onset of the fail-safe mode includes full motive power during the initial 22 minutes after ICCU fault detection, followed by five (5) stages of progressive warnings and gradual motive power limitations, providing a total cumulative drive time of up to 45 minutes in fail-safe mode. Further examination of the test results confirmed that total drive time with access to motive power is dependent on several factors such as powered vehicle accessories, ambient conditions such as temperature and humidity, and road driving conditions such as curvatures and inclines.
- On May 24, 2023, NASO held a video conference meeting with NHTSA to discuss updates to its investigation, including the results of HMC’s joint testing with KATRI.
- On June 23, 2023, NHTSA issued an opening resume letter stating that formal investigation PE23-011 had been opened to investigate ICCU failures in certain model year 2022-2023 Hyundai IONIQ 5 vehicles manufactured by HMC for sale in the U.S.
- On July 17, 2023, Hyundai launched service campaign SC997 to address the subject condition in affected Hyundai electric vehicles in the U.S. market.
- On July 28, 2024, HMC performed a second test at the Hyundai-Kia Namyang Centre High-Speed Proving Ground using a Hyundai production test vehicle with multiple accessories activated. The results indicated 11 minutes of full motive power and 33 minutes of total vehicle operation

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following a low-voltage convertor fault, with multiple visual warnings and an audible chime, leading up to a complete vehicle stall condition.

- On August 10, 2023, NASO submitted its first response to PE23-011 to the agency.
- On September 21, 2023, Genesis launched service campaign SC907G to address the subject condition in affected Genesis electric vehicles in the U.S. market.
- On September 26, 2023, NASO held a joint vehicle demonstration with HMC and members from NHTSA's Vehicle Research and Testing Center ("VRTC") at Hyundai's Safety Test and Inspection Laboratory (STIL) in Michigan. The results confirmed 10 minutes of full motive power and approximately 21 to 26 minutes of total vehicle operation leading up to a complete vehicle stall. The test was performed with conditions representative of a "harsh" or "worst-case" scenario, including multiple vehicle accessories powered on and use of a test-track containing turns and inclines requiring driving maneuvers typically demanding increased 12-volt auxiliary power draw. NASO and HMC also noted that test trials performed in advance of the joint session yielded results consistent with prior findings.
- On September 27, 2023, NASO submitted its final response to PE23-011 to the agency, including its final assessment of the subject condition.

### ❖ [January – February 2024](#)

- On January 31, 2024, HMC informed NASO of its updated findings in its investigation. NASO's Data Analysis ("DA") team created a new case for reconsideration of the current service campaign and immediately escalated it to the Data Review Committee ("DRC") on January 31, 2024.
- On February 7, 2024, the DRC escalated the case to the Technical Review Committee ("TRC") based on its preliminary analysis of field information. NASO's TRC began analyzing and confirming field information, including an examination of the ongoing service campaign, related claim data, and accumulated results of prior testing performed by HMC.

### ❖ [March 2024](#)

- On March 8, 2024, HMA's NASO convened its North America Safety Decision Authority ("NASDA") for review of the TRC's findings and recommendation.
- In its review of the subject condition, the NASDA acknowledged that multiple, extensive operator warning(s) occur over an extended period of drive time, during which the vehicle initially retains full motive power before entering several stages of gradually reduced motive power, culminating in a loss of all motive power after a time period of 22-45 minutes. Although the NASDA concluded that the length of available drive time with sufficient mobility during fail-safe driving is reasonably sufficient for detection by vehicle occupants, and NASO's investigation did not identify related any crashes or injuries, the NASDA decided to conduct a safety recall of affected Hyundai and Genesis vehicles in the U.S. and Canada out of an abundance of caution.

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- ❖ **NASO has confirmed six hundred and eighteen (618) unique incidents in the U.S. from reports received beginning March 8, 2022, through March 5, 2024. There are no crashes, injuries, or fatalities attributable to this condition in the U.S.**