

An Evaluation of a 1976 Prototype Questor Datsun

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Background

EPA has previously tested the Questor emission control system on two 5000 lb. inertia weight vehicles with results below 1976 emission levels at low mileage and agreed to test the system on a lighter vehicle. A Datsun 1800 with an inertia weight of 2500 lbs. was supplied for evaluation.

Vehicle Tested

The Questor "Reverter" system was installed on a 1973 Datsun 1800 with a 109 CID engine and automatic transmission. The heart of the emission control system is a non-noble metal reduction catalyst sandwiched between partial thermal reactors. Carburetor calibration and exhaust port air injection rates are set such that a reducing atmosphere is still present after the exhaust gas passes through the first partial thermal reactor stage. After the exhaust gas passes through the NOx catalyst, additional air is added to complete combustion of the remaining HC and CO. EGR is not used. Details of this system can be seen in report 73-9, "A Second Evaluation of the Questor Emission Control System", published November 1972 by ECTD. No mileage had been accumulated on this system when it was received in the EPA laboratory.

Test Program

The vehicle was tested according to the 1975 Federal Test Procedure as outlined in the November 15, 1972, Federal Register for light duty vehicles. Fuel economy was calculated by weighing the amount of fuel used during each test.

Test Results

The test results are presented below, along with fuel economy:

<u>Test No.</u>	<u>HC</u>	<u>CO</u>	<u>NOx</u>	<u>MPG</u>
16-552	.11	3.60	.17	16.9
16-558	.13	3.61	.16	16.9
AVERAGE	.12	3.60	.16	16.9
'76 levels	.41	3.40	.40	---

A 1973 Datsun certification vehicle with an 1800 engine and automatic transmission achieved 20.19 mpg while two similar certification vehicles with manual transmissions achieved an average of 18.2 mpg. Compared to the certification vehicle with an automatic transmission, the Questor Datsun suffered a 24% fuel economy penalty.

Conclusions

The Questor Datsun did not meet the 1976 levels, being high in CO emissions. The HC and NOx emissions were significantly below the standards. It was indicated that if Questor had had more time to properly calibrate the vehicle all of the emission levels could have been met at low mileage. A significant fuel economy penalty was associated with this emission control system.