Why and How

The video tilted; **Scanner Danner Nissan Pickup low power , will not stay running (with James Danner),** is a very interesting one. The reason is that ; while many technicians know about this technique of disconnecting the MAF (Mass Airflow Sensor) and try to restart, which may work sometimes, most of them does not know why the symptom is very similar to that of low fuel/ low pressure or the symptom of electronically mobilised.
I would like to add the following:
1) My own experience of helping a colleague running his own garage to fix a Mercedes S280, year 2000,with exactly the same symptom as the above Nissan Pickup one and the following was done:
* Earlier a mechanic was called and without testing he changed the fuel pump, and left when no fix.
* When I arrived I was shown that the engine can run on carburettor cleaner spray and there was a strong request not to do any checks on the fuel pump.
* suspecting the engine might be immobilised, I have connected a scope to one injector to monitor the command voltage while spaying past the MAF.
* I have noticed that the signal starts to disappear when the engine is about to stall and as the MAF was disconnected (To make room for the spray) I gave it a try in switching the engine off, then switching on for about 10 seconds and off again before restarting. The engine started and continue to run with no need for the spray.
2) **The Why and How;** Recently I have read a good article from The Pico Library; Titled:
Toyota Hilux None-Starter written by Steve Smith. This is about a customer purchasing from an Auction a Hilux pickup (2007 Diesel) and in days he went viewing from no start to a kind of start just at the day of the auction.
What our colleague Steve noticed through his through tests that; A bad modification was done to get the vehicle driven to the auction hall. This was done by cutting and connecting the starter circuit to the ignition engine run terminal and using the starter terminal for cranking only. When there is a fault in the engine management system causing a crank no start, then the above technique was (Really Badly) used to fool the engine computer that the engine is still in the cranking mode.
Steve had to research and beg information from a number of engineers until they surrendered the answers:
The starting phase of an engine is subjected to a "Mask period" during cranking where the PCM switches to a basic fuel map whilst the starter signal (STA) is set to ON. Basically it looks at cam and crank for synchronization using a counting technique.
Based on the correct sync and number of teeth everything else can be ignored from a monitoring point of view. It's almost like the PCM closes its eyes during cranking (other than counting), and hopes for the best! Once started and set conditions are met (such as engine speed above a threshold level and STA terminal to 0 V), the system can then switch to the relevant running map, go to full monitoring of various sensors/actuators and so generate any relevant codes.

Now I understand that; In the case of a very bad MAF signal, once the engine is started after the "Mask Period" the computer will shut off the engine, when it receives that very bad MAF signal. This conclusion is subject to a fruitful discussion of; Agreeing, modifying or even rejecting.

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