Read Data by Periodic Identifier **(0x2A)**

Purpose: This service is used to get periodic data values from the ECU by the tester for the purpose of debug the root cause using Periodic Data Identifiers

Introduction

- ECU send positive response to the tester **before the reset is executed** in the ECU. After a **successful** server reset, the server shall activate the default Session.
- If the server is addressed which not able to stop the setting of **diagnostic trouble codes** status bits then it will respond with negative response message indicating the **rejection**.
- If the requested state is in active but tester request the same again then ECU will send **positive response**
- This service just suspend the DTC Status bits to not update, rather it's **not disable** or impacting failsafe modes

Sub-functions

Enum Values	Description
0x00	SAE Reserved
0x01	On
0x02	Off
0x03 to 0x3F	SAE Reserved
0x40 to 0x5F	OEM Specific
0x60 to 0x7E	Supplier specific
0x7F	SAE Reserved

The two sub-functions for control DTC Setting is to start & stop the setting of DTCs

- **On - 0x01 : The ECU will resume to set the trouble code in to the server's memory**
- **Off – 0x02 : The ECU will stop to update trouble code status bits in to the server memory**

Request Frame:

1. **Service Id**
2. **Sub-function (DTC Setting Type : Stop or Resume)**
3. **DTC Setting Control Option Record**

DTC Setting Control Option Record:

DTC Setting Control Option Record is optional data to be transmitted by tester to ECU when controlling the DTC status bits (Ex: list of DTCs to be turned on or off)

Positive Response Frame:

1. **Service Id**
2. **Sub-function (DTC Setting Type : Stop or Resume)**
3. **DTC Setting Control Option Record**

Negative Response Frame:

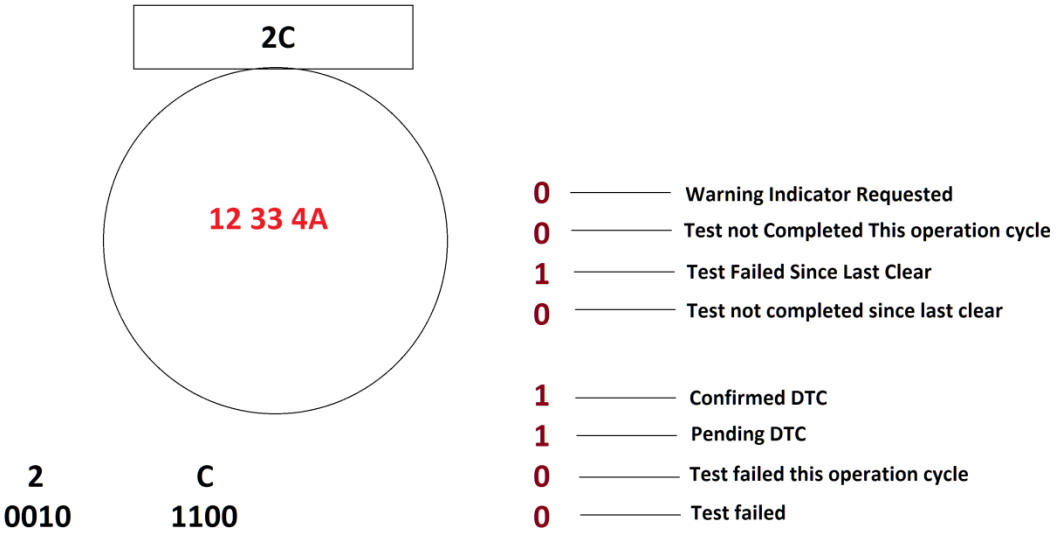
1. **Negative Response (7F)**
2. **Service Id**
3. **NRC Code**

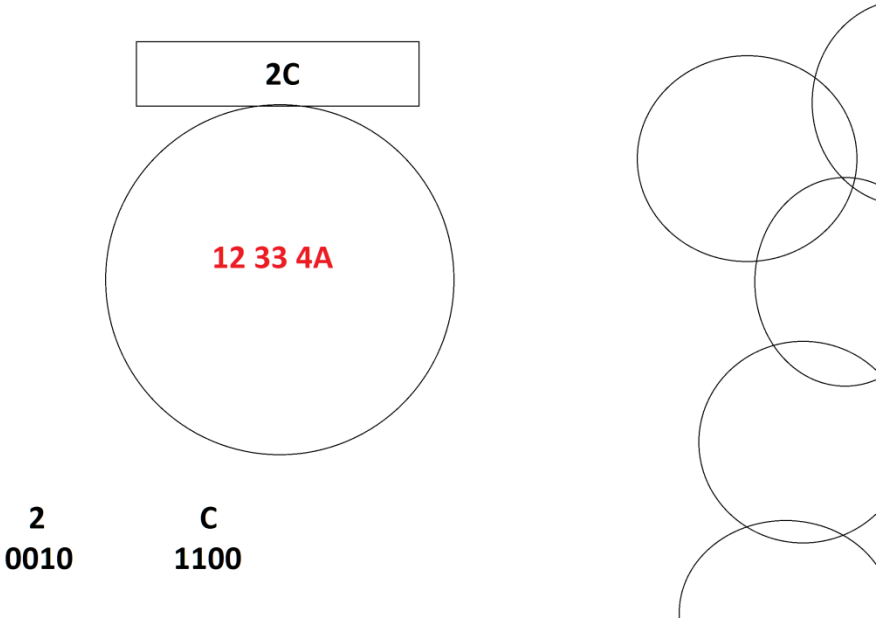
Under circumstances that The ECU will resume to set the trouble code in to the server's memory

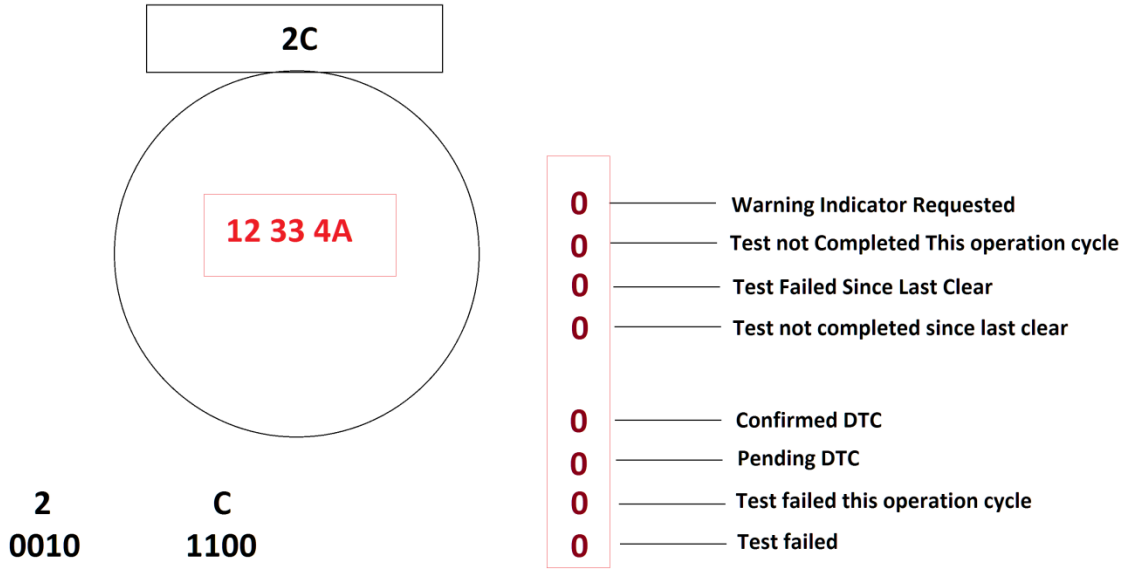
1. **Sub-function (DTC Setting Type : Resume)**
2. **ECU Reset**
3. **Session transition where Service (0x85) is not supported**

4. **Clear DTC Information**

Understanding on Control DTC Settings !!

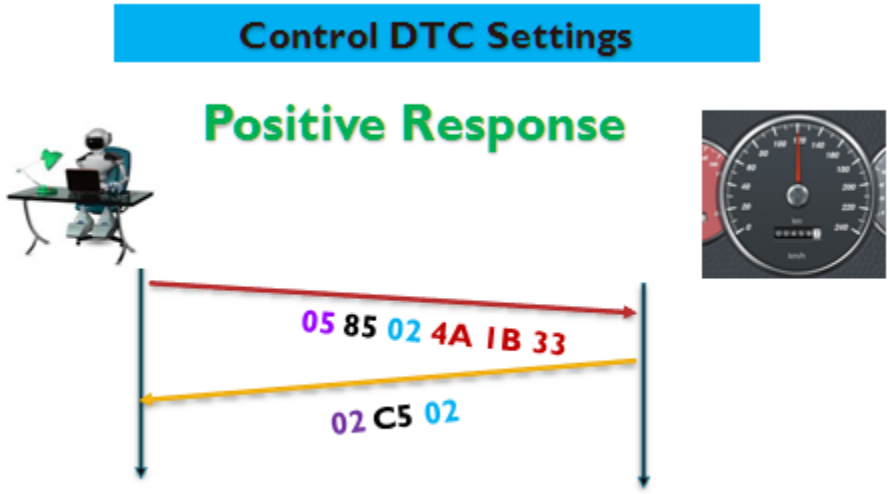






Assumption scenario:

- **Tester wants to diagnose/read faults other than Airbag failure fault (4A 1B 33), so the mentioned DTC is switched OFF (sub-function – 0x02)**



In the above transmission the DTC status bit update is supspended so this DTC will not log again !!

DTC's Suppressed because of 4A 1B 33 :

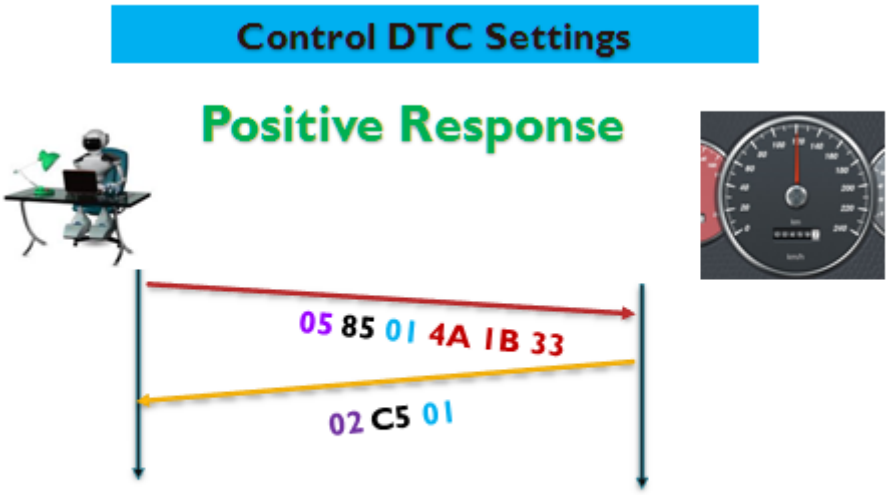
2F 01 00 - Brake failure -

11 3D 11 - Camera Lens Adjustment Needed -

16 21 1F - Spark Ignition gets damaged

10 1B 1A - Wheel pressure is lesser than threshold level

- **Whenever tester wants to switch ON the DTC (4A 1B 33), then mentioned DTC can be switched ON (sub-function – 0x01)**

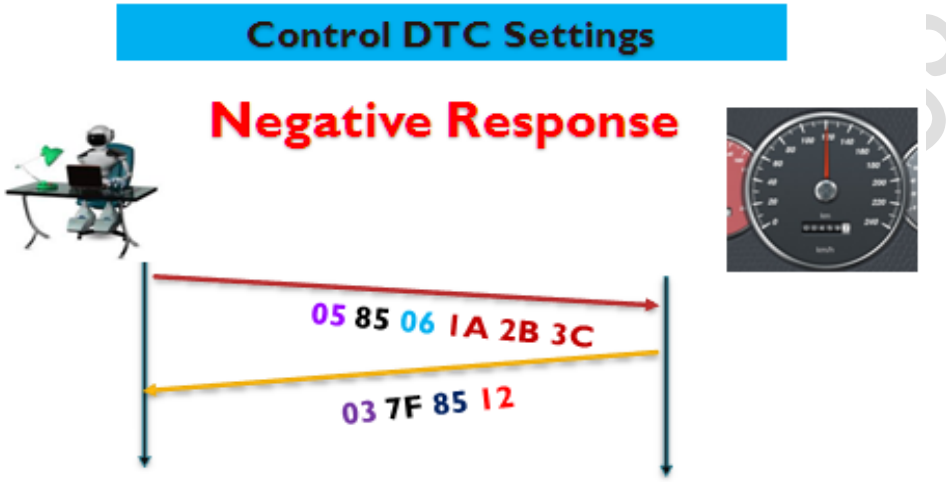


List of NRCs Supported

1. 0x12 **Sub-function Not Supported**
2. 0x13 **Incorrect Message Length**
3. 0x22 **Conditions Not Correct**
4. 0x31 **Request Out of Range**

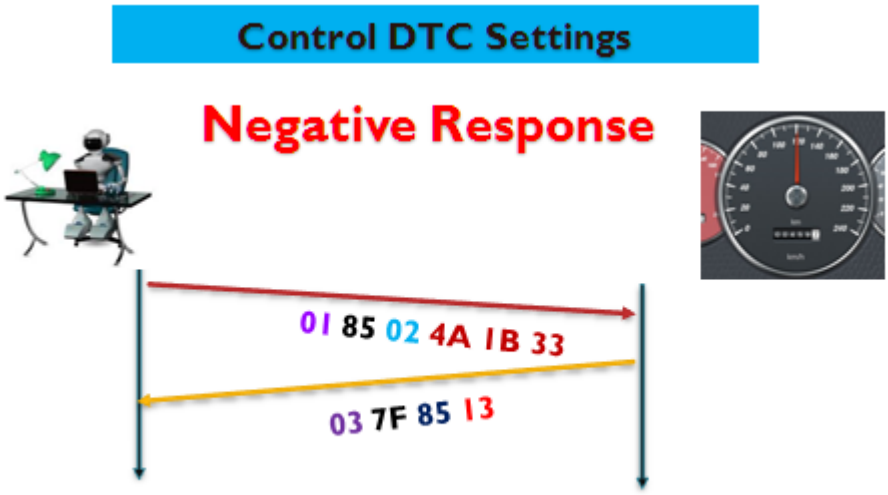
Sub-function Not Supported (0x12)

ECU responds with **NRC 12** if tester tries to request with unsupported sub-function and the **sub function is not supported** as per requirement



Incorrect Message Length (0x13)

ECU responds with **NRC 13** if tester tries to request with **incorrect message length**



Conditions not correct– NRC 22

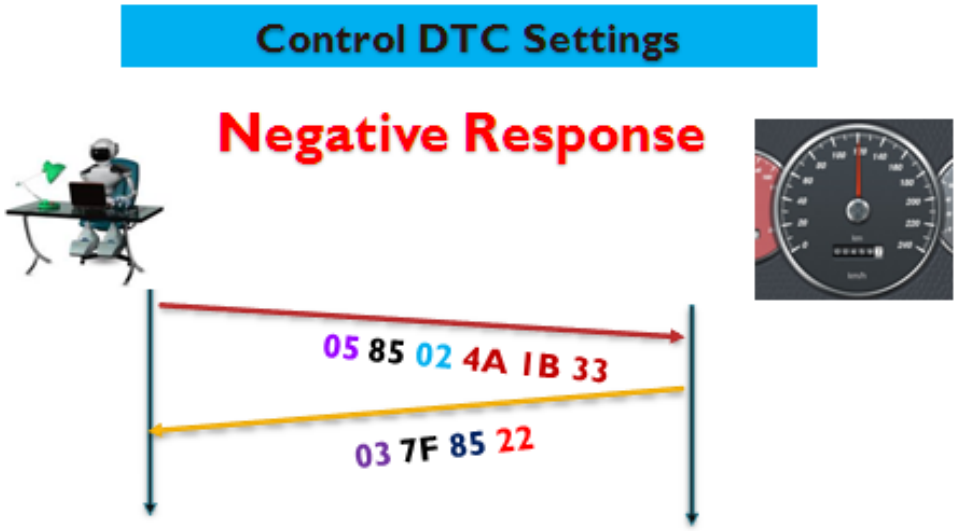
Conditions not correct

This NRC occurs under different circumstances such that –

- If requested server operating conditions are not met
- If requested server Internal conditions are not met
- If server is in critical mode
- If server request is already in progress and yet to finish
- If requested criteria not met in the server

Sub-function Not Supported (0x22)

ECU responds with **NRC 22** if tester tries to request this service when the **conditions are not met**.



Sub-function Not Supported (0x31)

ECU responds with **NRC 31** if tester tries to request this service with DTC that is **out of range**.

Assumption Requirement says, DTC **1A 1B 3C** are not supported for this project. But tester requests with the **unsupported DTC**, Let's see the response for the request

Control DTC Settings

Negative Response