

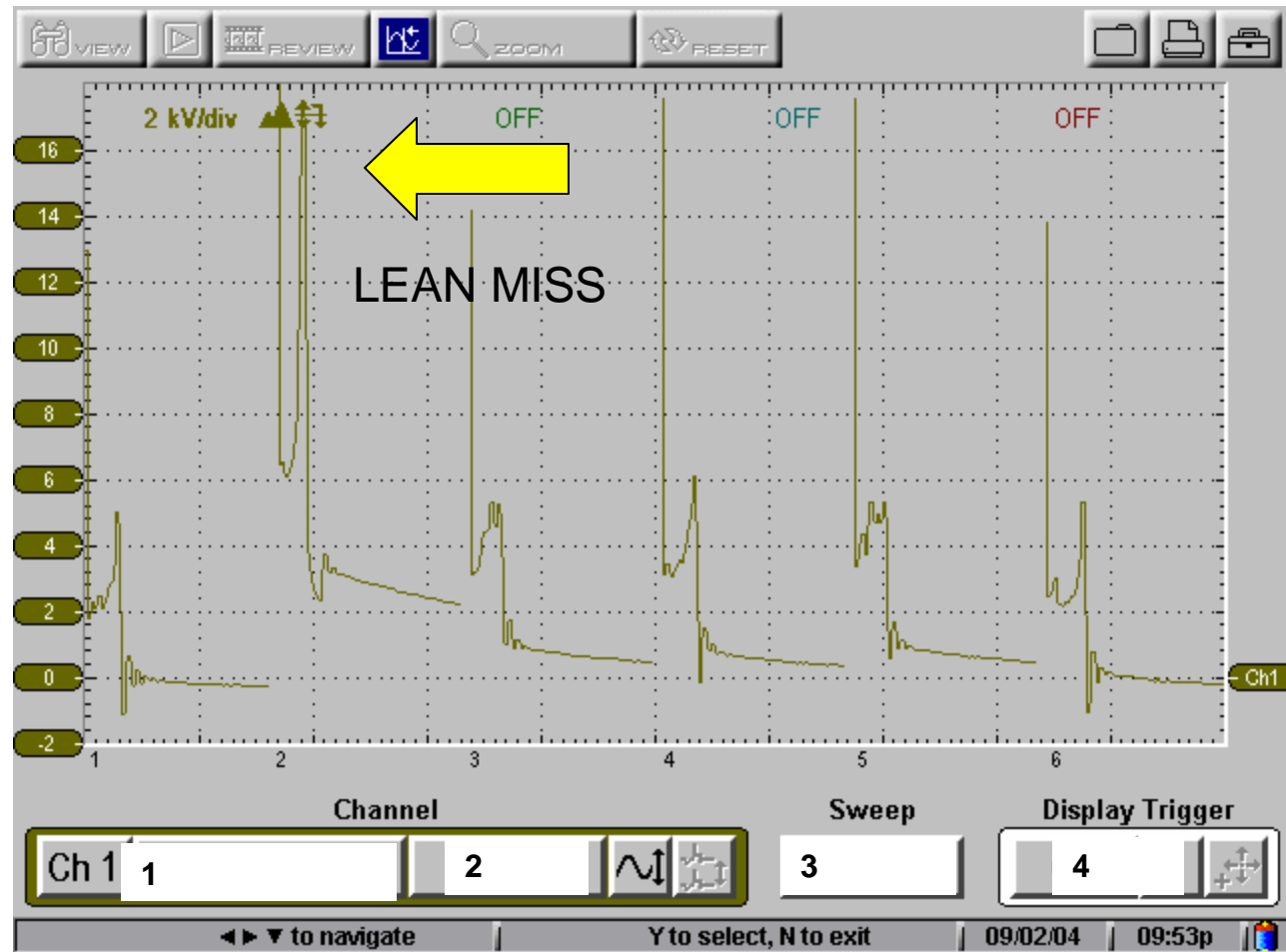
# 94 MAXIMA

- CASE STUDY - CODE 51, INJECTOR CIRCUIT
- WE'LL USE SECONDARY IGNITION, CURRENT RAMPING AND THE IMPULSE SENSOR
- SEE THE PROCESS WITH THREE DIFFERENT METHODS



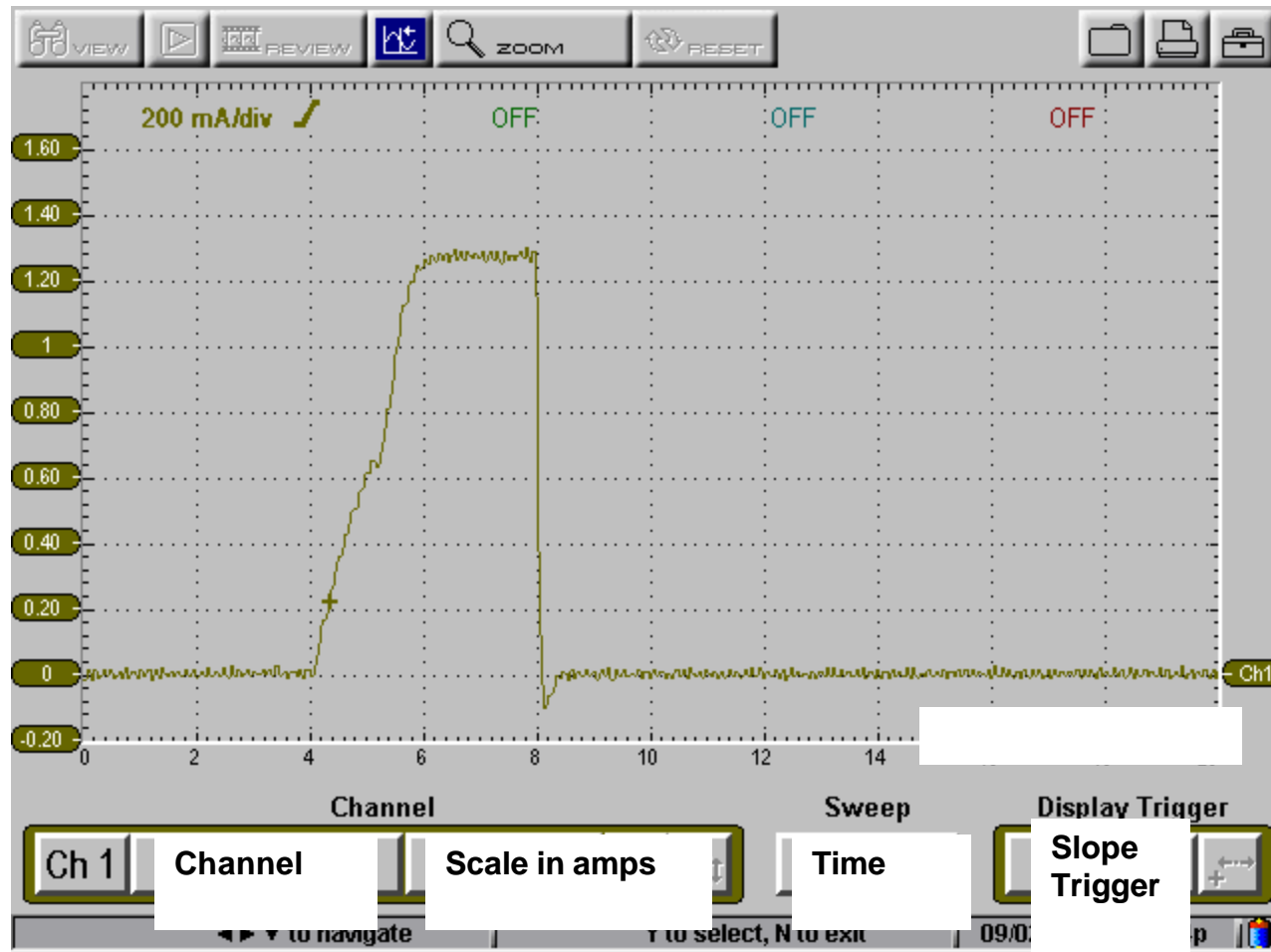
# Secondary Ignition

- STILL ONE OF THE FASTEST WAYS TO SEE WHERE AND WHAT IS GOING ON

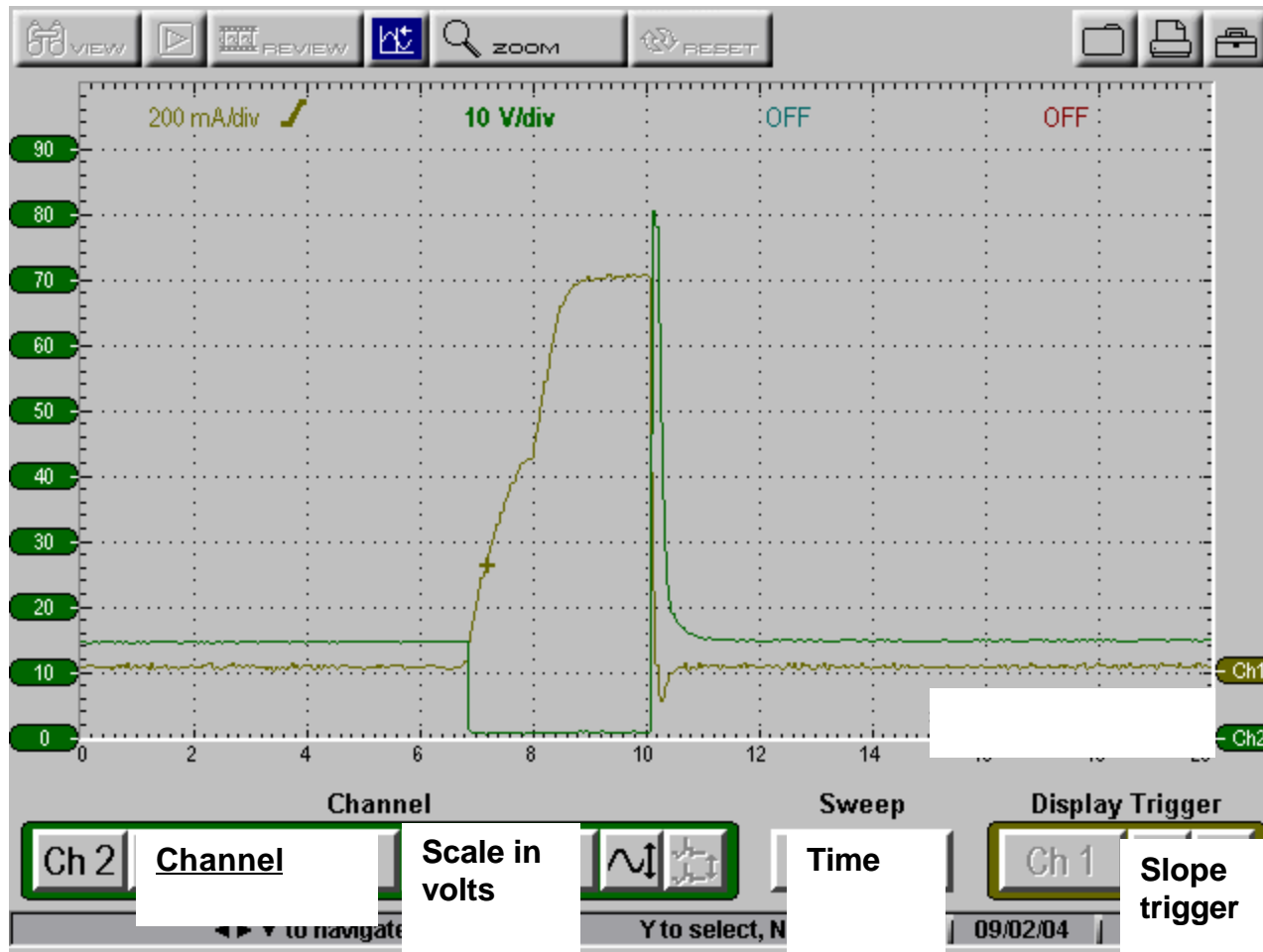


# CURRENT OF # 1 INJECTOR

- SET UP THE SCOPE

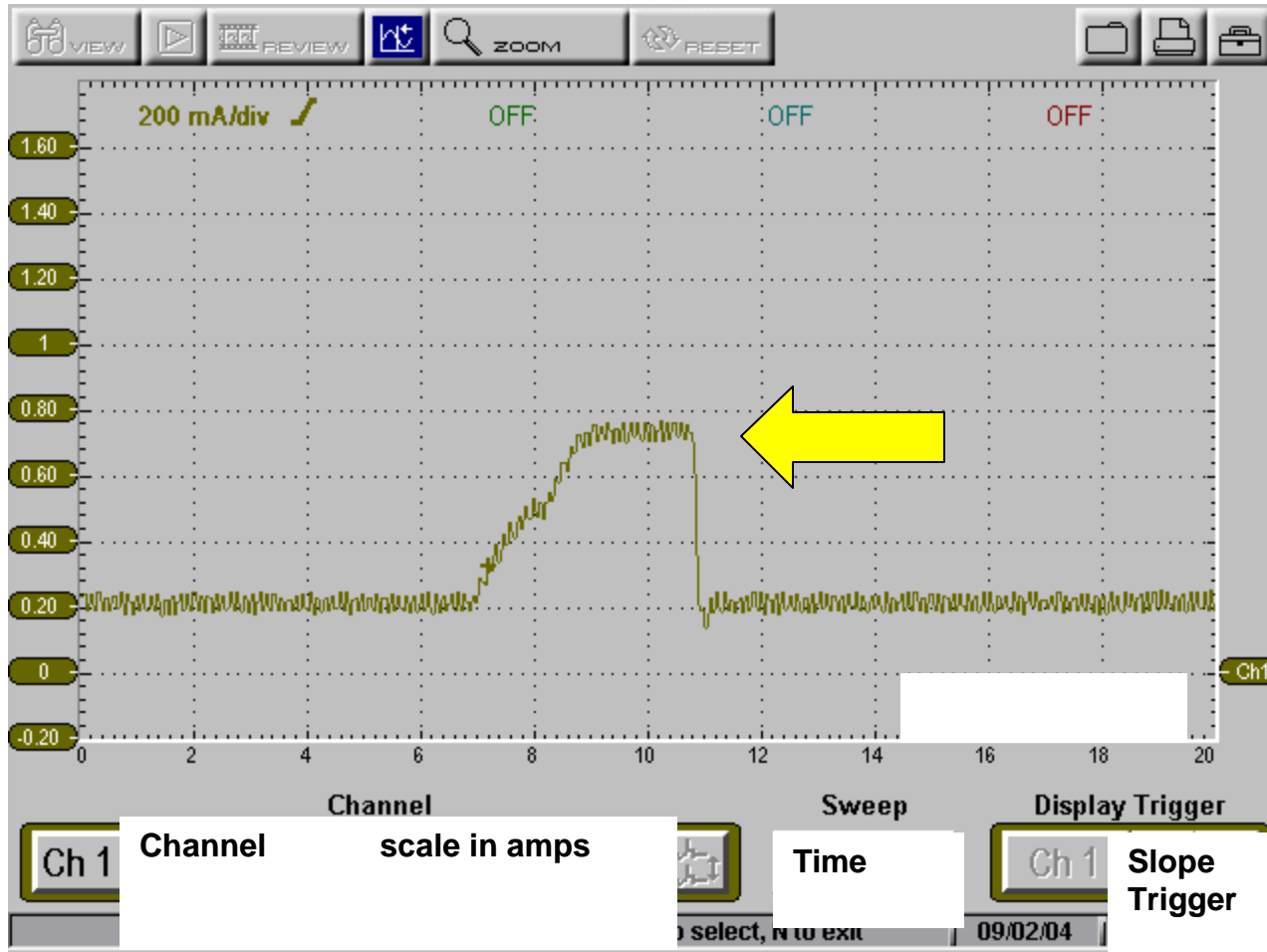


# GOOD INJECTOR CURRENT VS. VOLTAGE



# CURRENT OF # 2 INJECTOR

- NOW THAT YOU KNOW WHAT GOOD LOOKS LIKE, IT IS EASY TO PICK OUT THE BAD

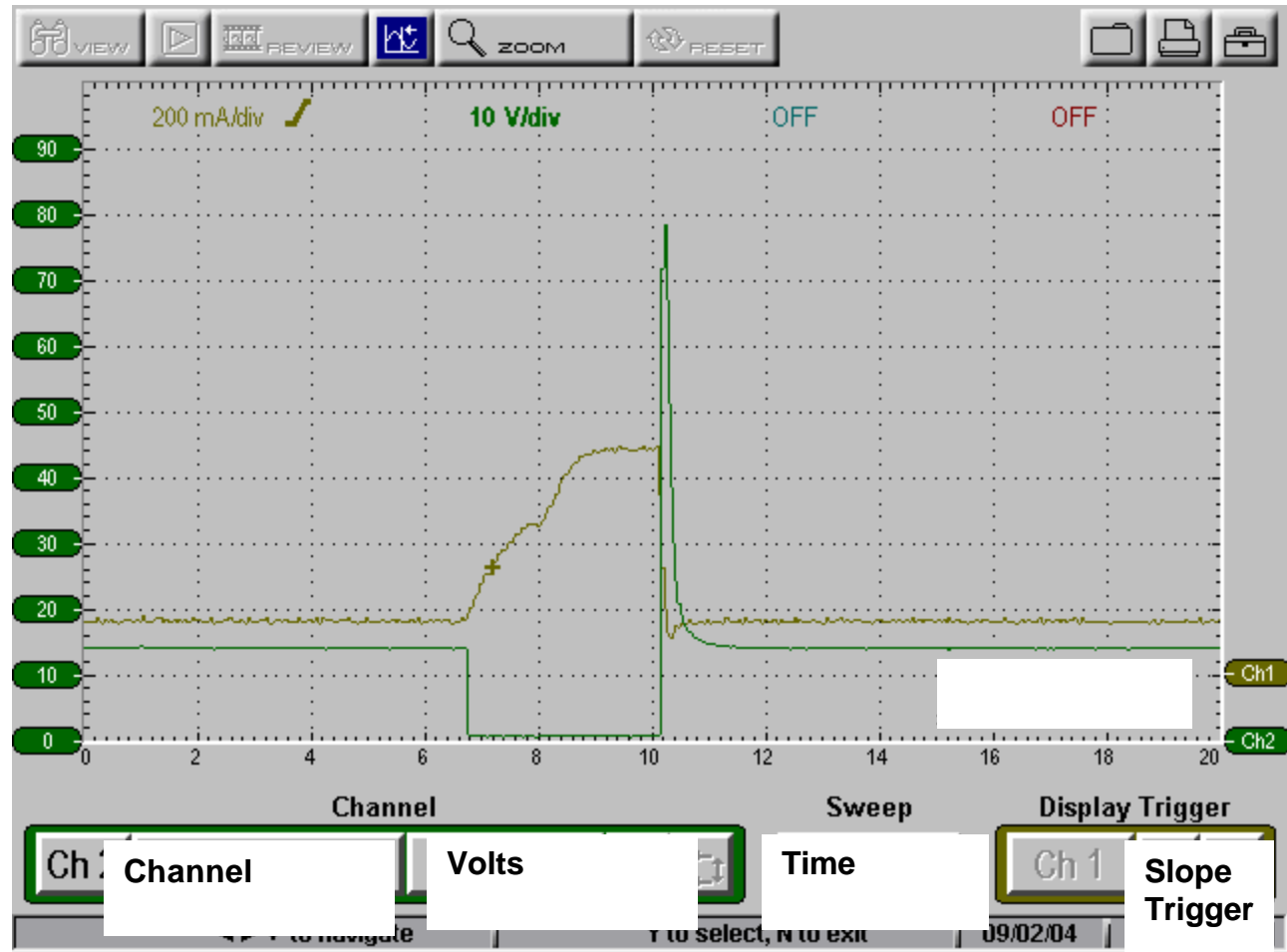


AS YOU CAN SEE THIS INJECTOR IS NOT REQUIRING AS MUCH CURRENT. BE CAREFUL HERE.. A BAD CONNECTION CAN CAUSE THIS. WHY?

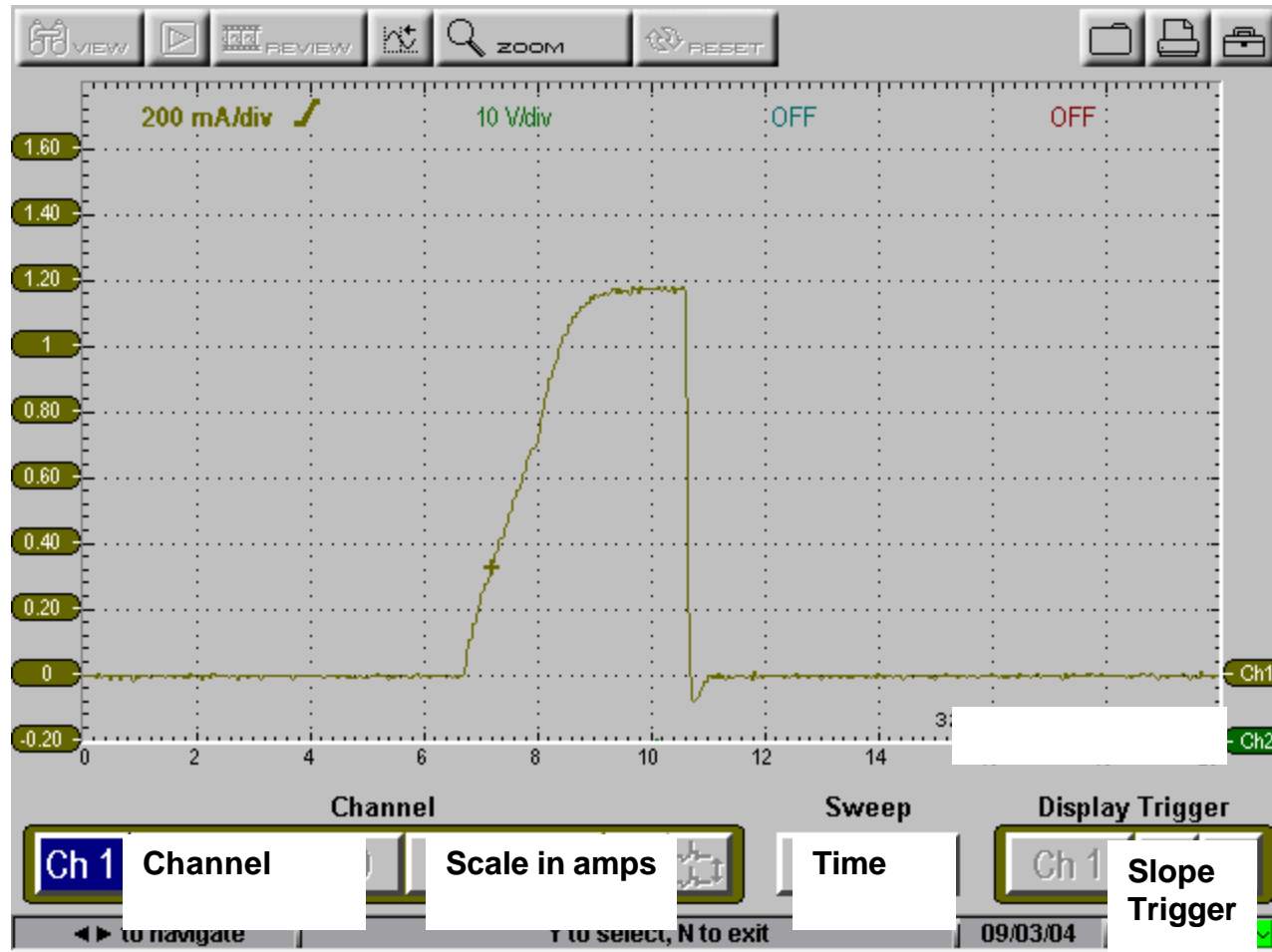
# BAD INJECTOR

## CURRENT VS. VOLTAGE

THE VOLTAGE PATTERN SHOWS ALMOST NO DIFFERENCE. THIS IS WHY CURRENT RAMPING IS SO EFFECTIVE IN COMPARISON TESTING. YOU GET TO SEE THE AMOUNT OF WORK A GIVEN DEVICE CAN DO COMPARED TO VOLTAGE WHICH MAY OR MAY NOT TELL YOU ABOUT THE CONDITION OF A GIVEN DEVICE.

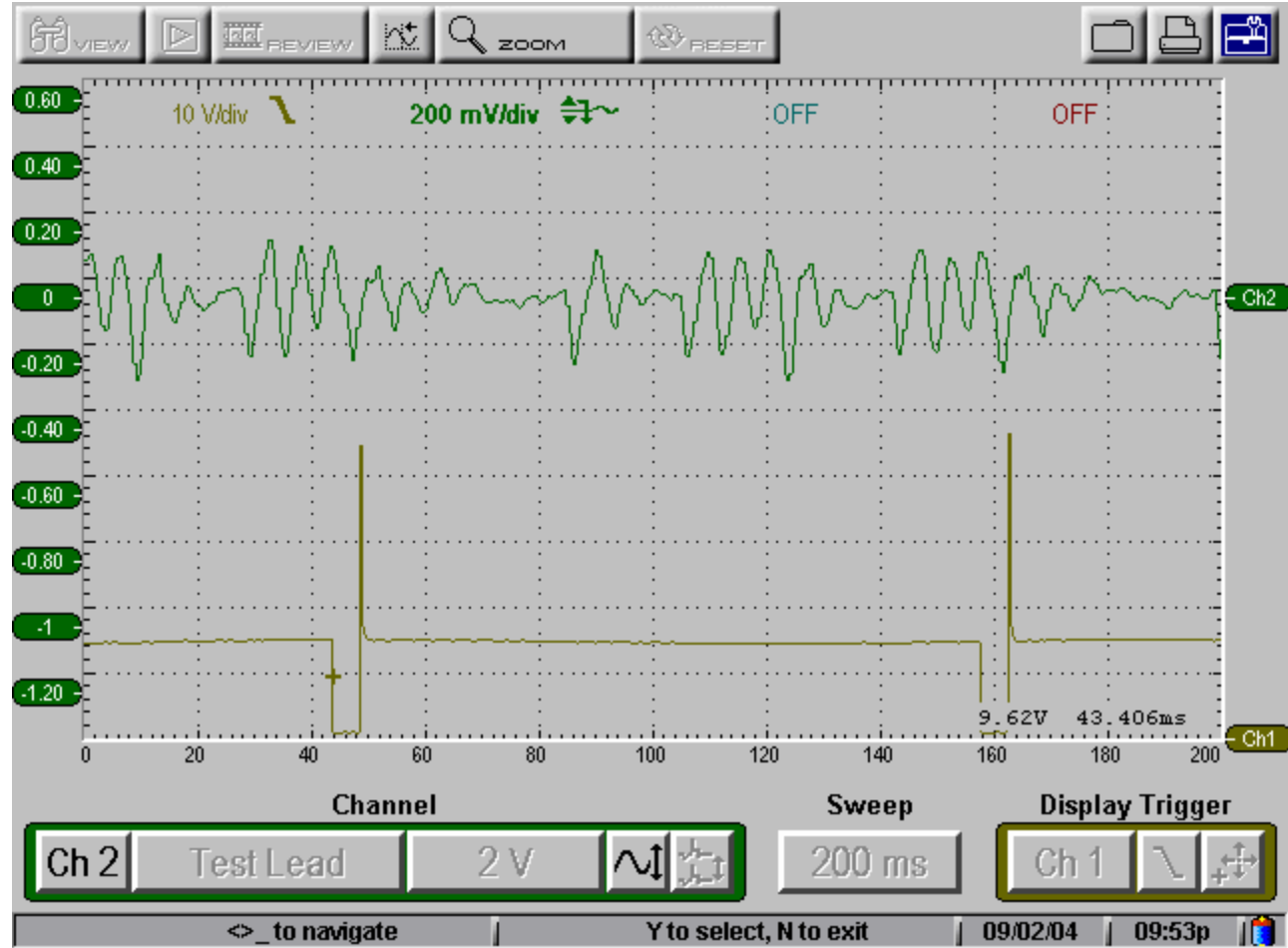


# NEW # 2 INJECTOR CURRENT



# A DIFFERENT WAY SEN-X IMPULSE SENSOR

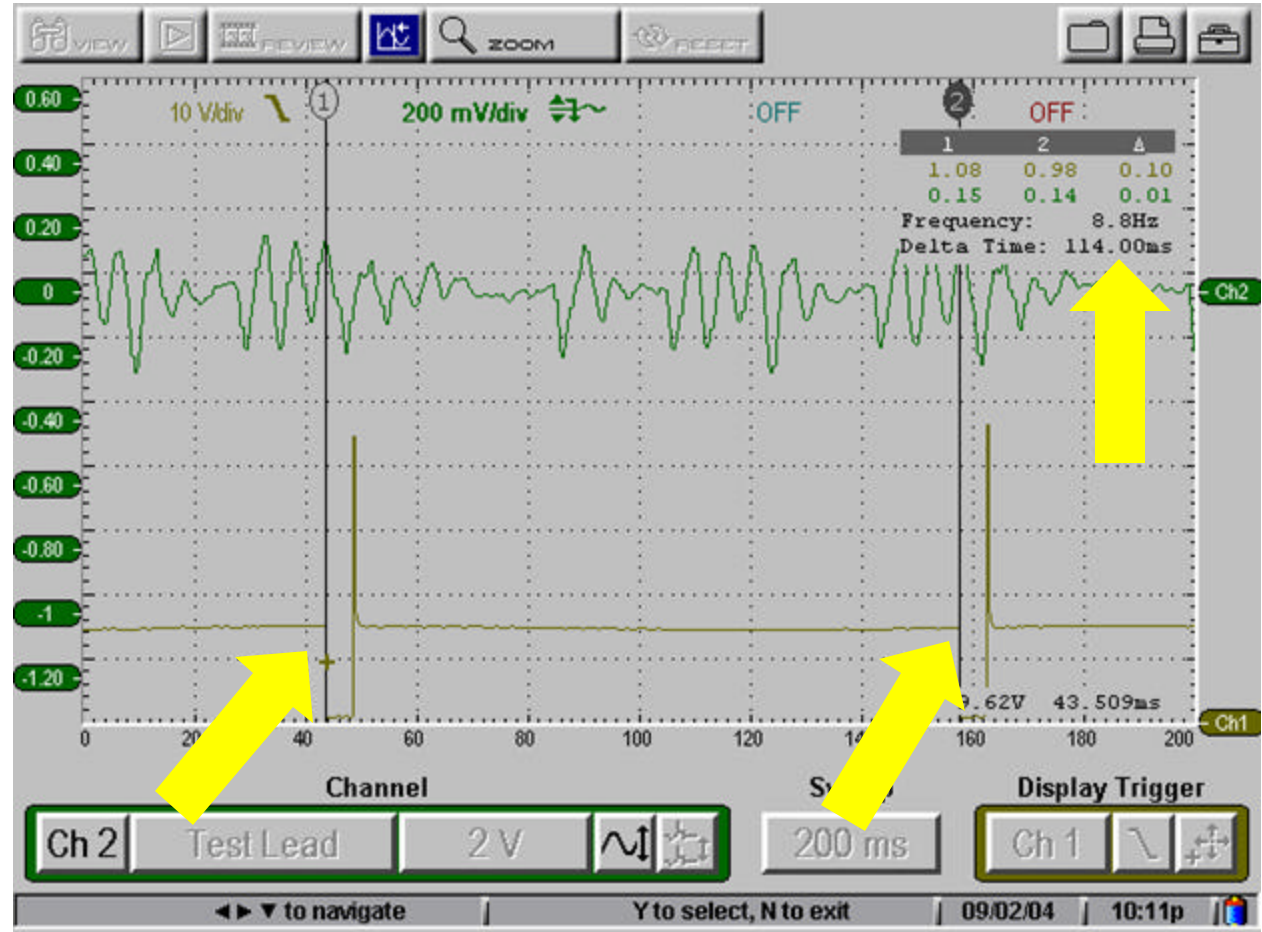
- HOOKED TO THE FUEL PRESSURE REGULATOR, WE READ THE PULSES GENERATED FROM THE DIAPHRAGM
- ✍ CHANNEL ONE IS TRIGGERED ON #1 INJECTOR.
- CHANNEL TWO IS CONNECTED TO THE IMPULSE SENSOR.



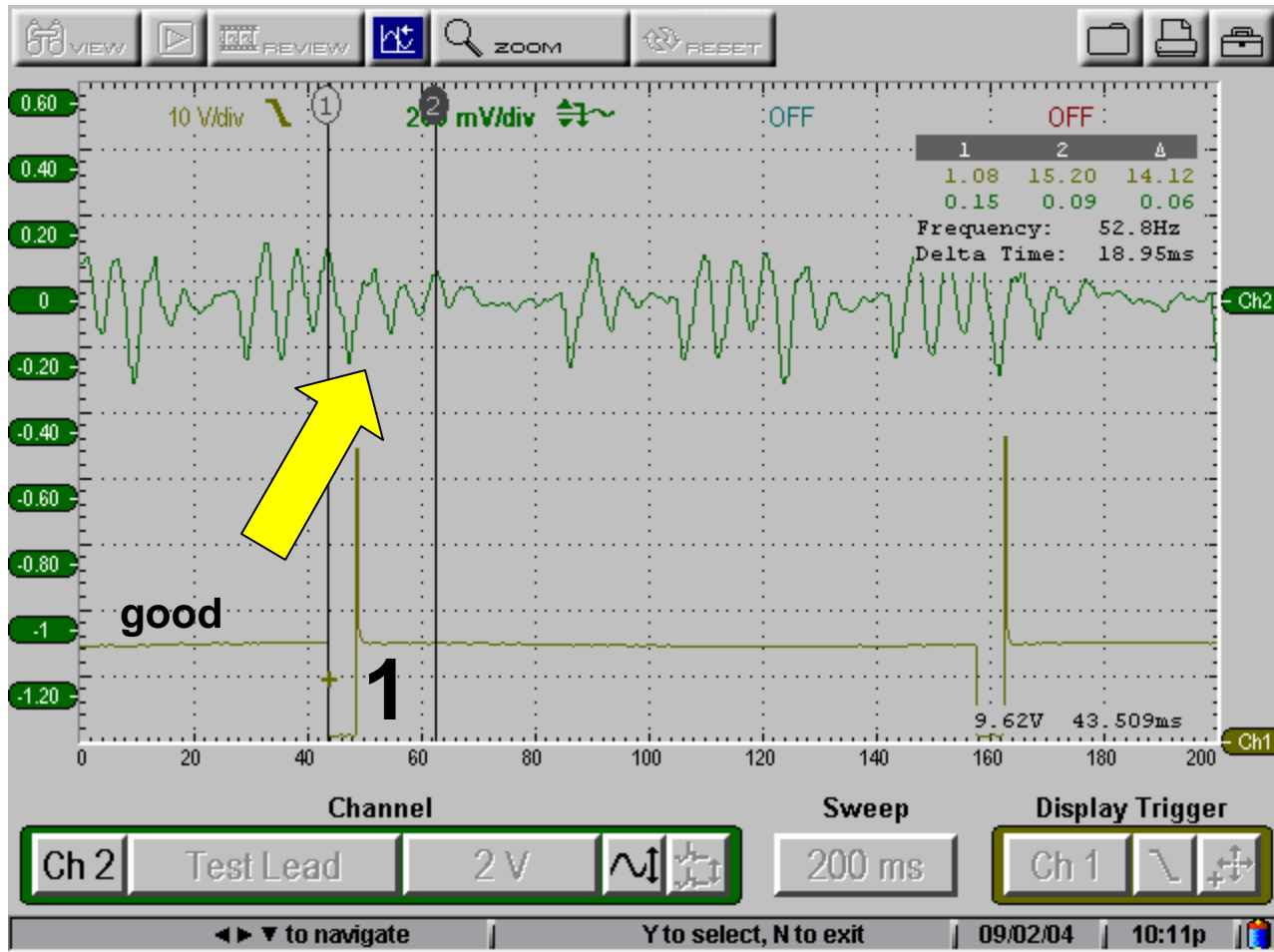


# TIME OUT # 1 IGNITION CYCLE

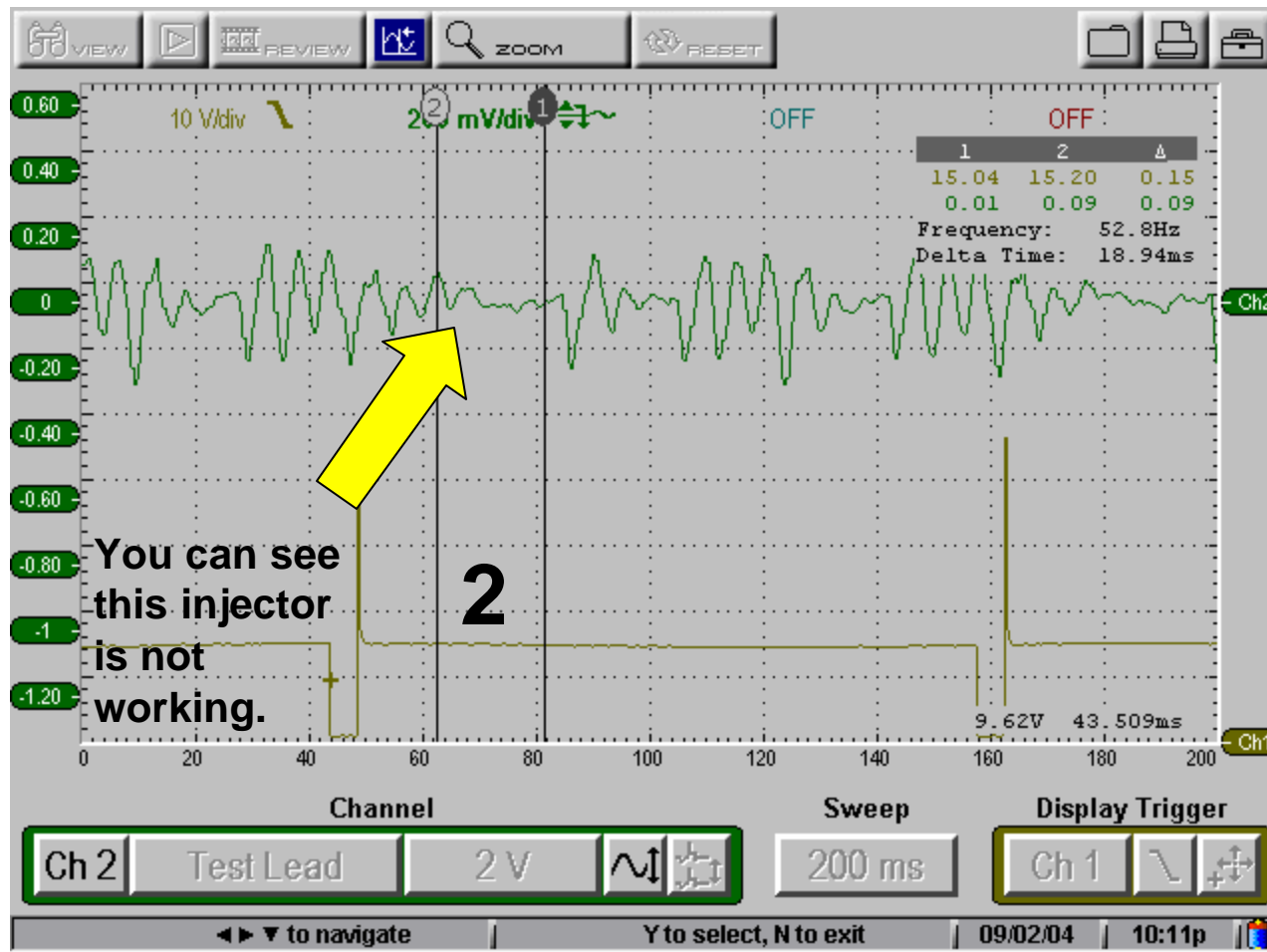
- 114 MS BETWEEN CURSORS
- WHICH MEANS 19 MS PER CYLINDER
- HOW DID I GET THAT?
- TAKE 114MS AND DIVIDE BY 6 = 19MS
- HOW DID I COME UP WITH 6?
- IT IS A SIX CYLINDER ENGINE. (EASY)



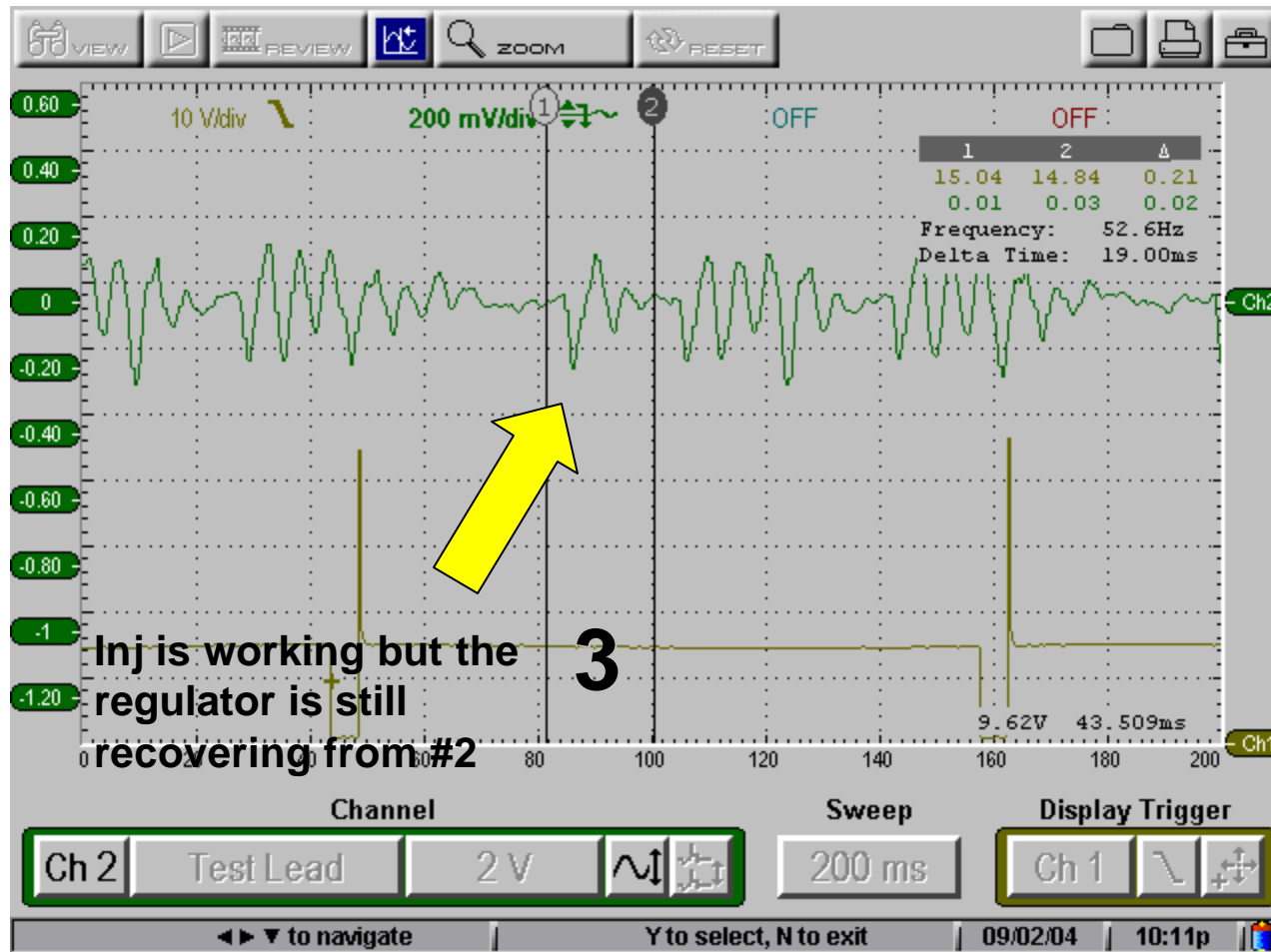
# EVALUATING CYLINDER 1



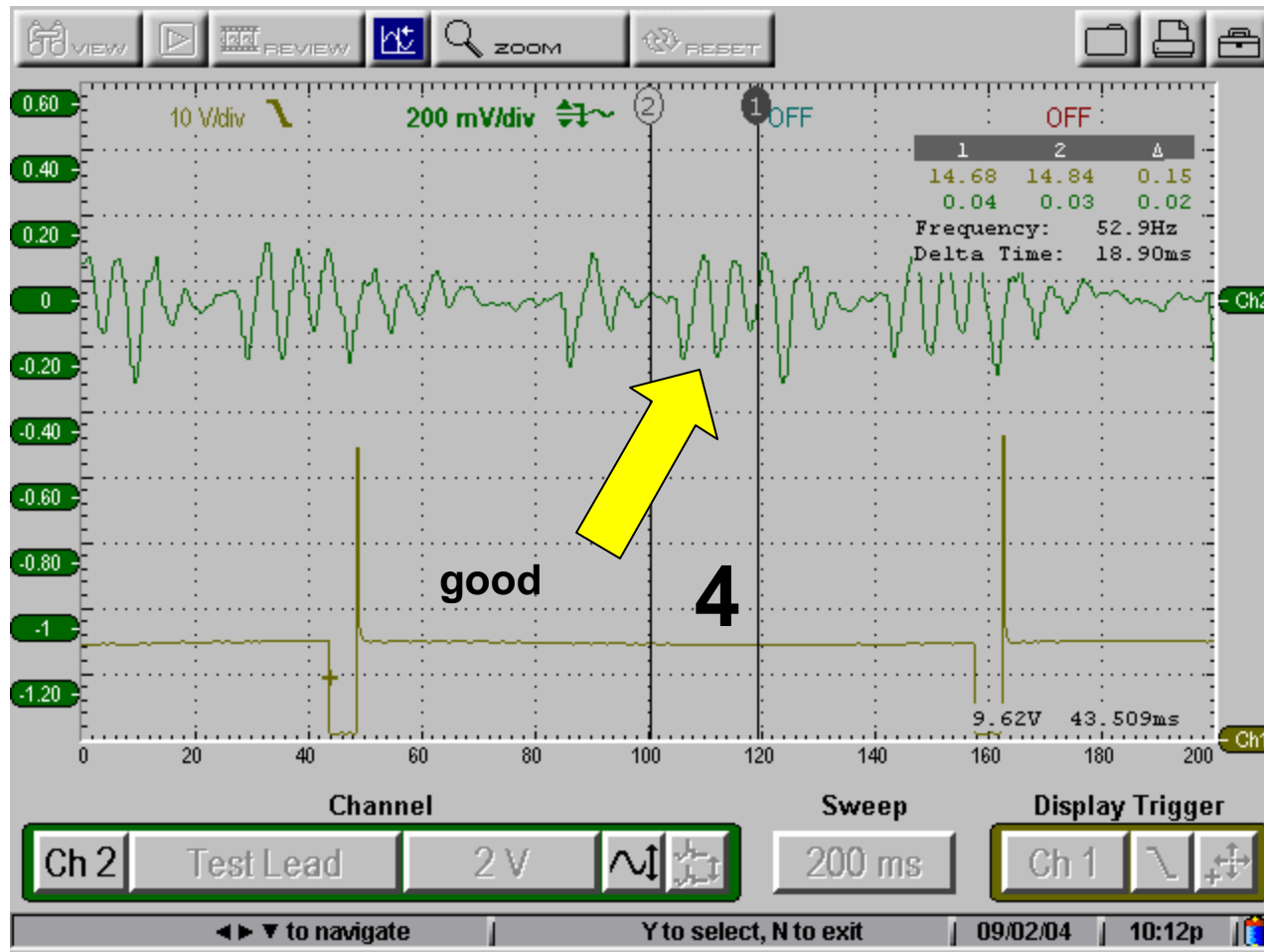
# EVALUATING CYLINDER #2



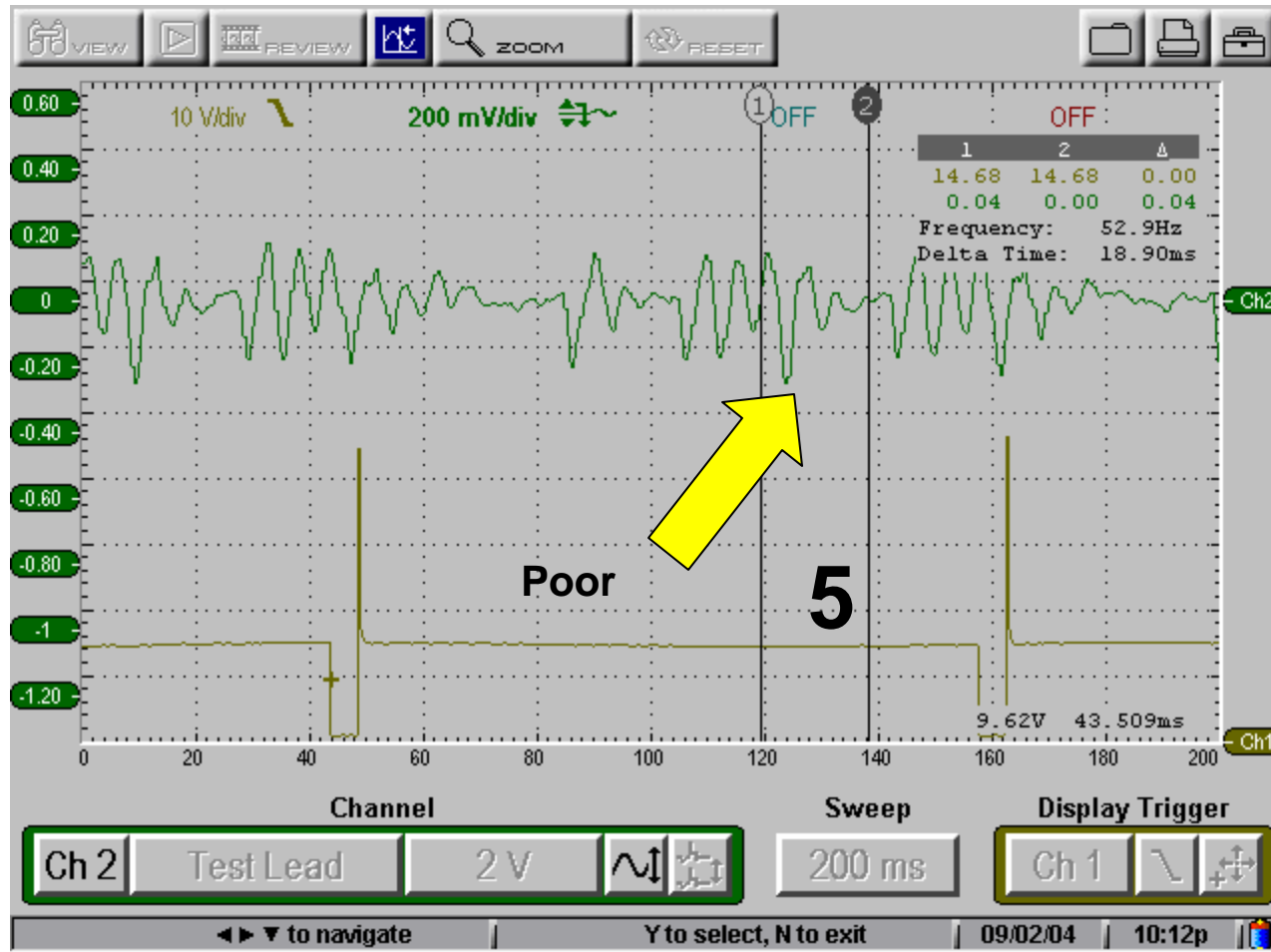
# EVALUATING CYLINDER #3



# EVALUATING CYLINDER #4



# EVALUATING CYLINDER #5

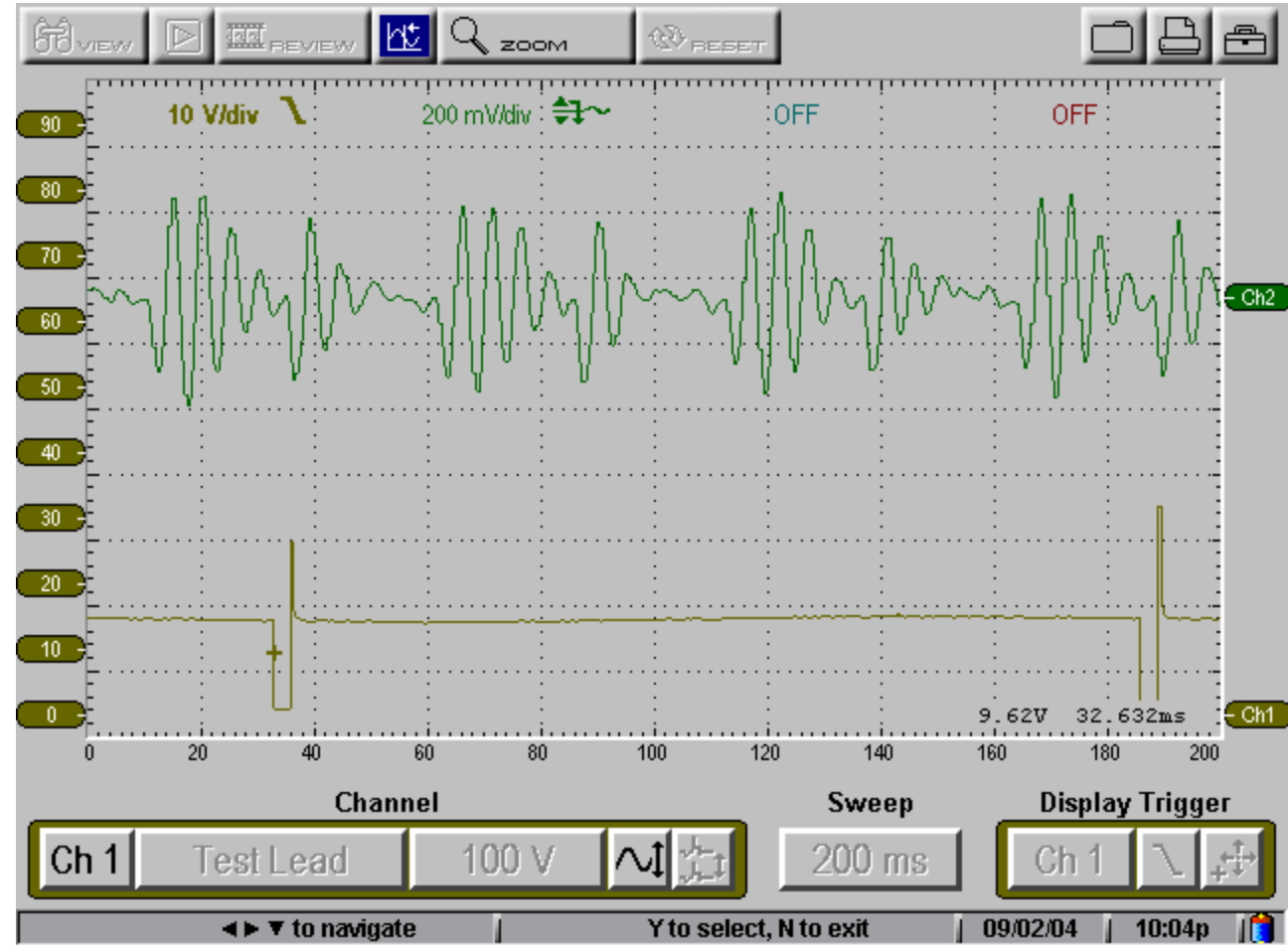


# EVALUATING CYLINDER #6



# New injectors on #2 & #5

- Notice the pattern difference between the two banks.
- This is normal on many cars.





# Injectors turned off on coast & cut off

