



# **RAJIV GANDHI INSTITUTE OF PETROLEUM TECHNOLOGY**

**DEPARTMENT OF PETROLEUM ENGINEERING & GEOENGINEERING**

## **DESIGNING AND OPTIMIZATION OF WELL PROFILE IN GUI USING WELL LOG DATA**

**MENTOR**

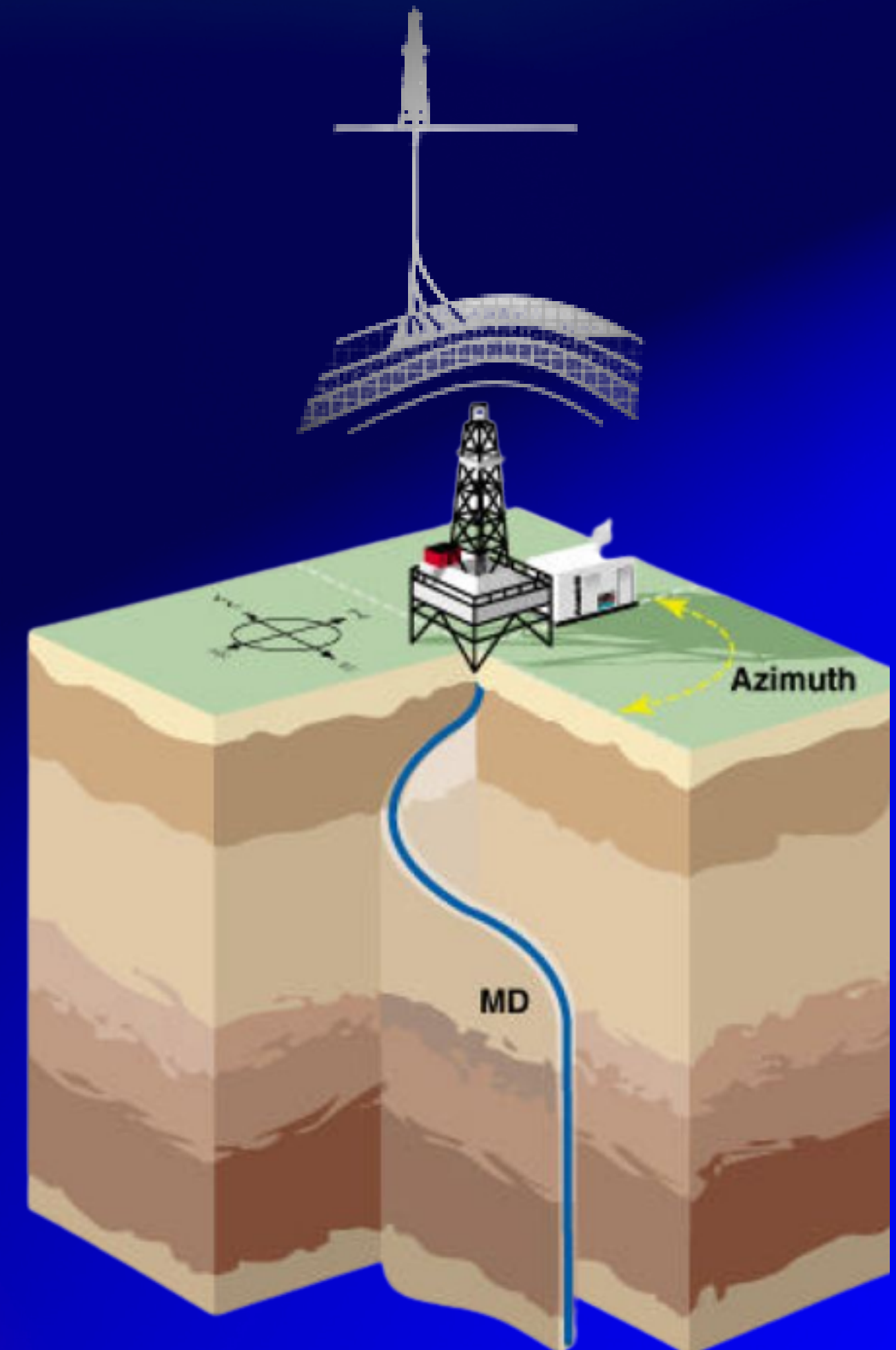
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**PRESENTED BY**

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# INTRODUCTION

- **Directional drilling is a technique used in the oil and gas industry to drill non-vertical wells.**
- **It involves intentionally deviating the wellbore from the vertical direction to reach specific target locations beneath the Earth's surface.**
- **Directional drilling allows precise placement of wells to intersect specific geological formations, maximize exposure to productive zones, and avoid hazards.**





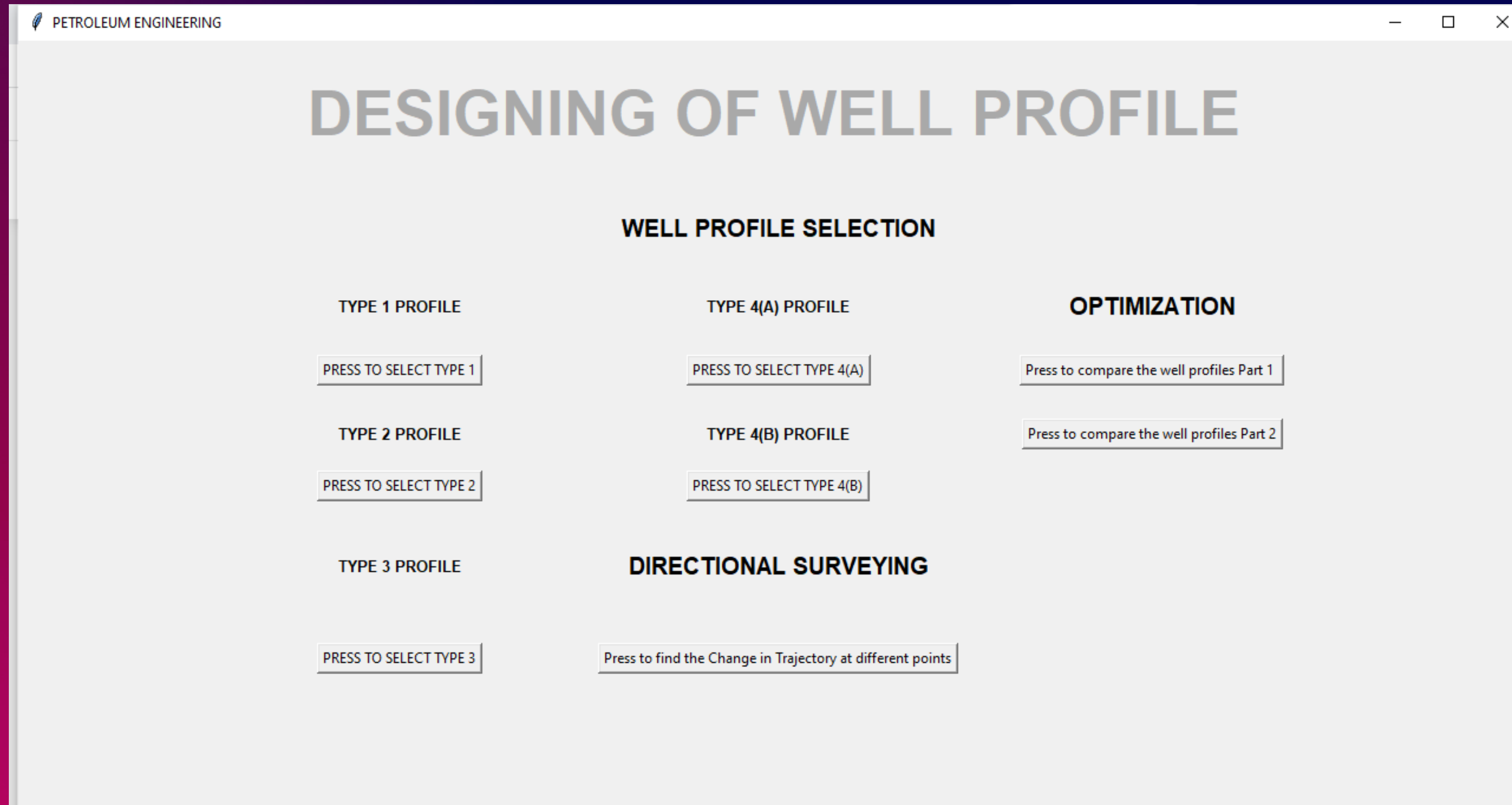
# WELL PLANNING

- Well planning is perhaps the most demanding aspect of drilling engineering. the end result should be a safely drilled, minimum-cost hole that satisfies the reservoir engineer's requirements for oil/gas production.
- When planning a directional well a number of technical constraints and issues will have to be considered, these are:
  1. Target location
  2. Target size and shape
  3. Surface location (rig location)
  4. Subsurface obstacles (adjacent wells, faults etc.)



# GRAPHICAL USER INTERFACE

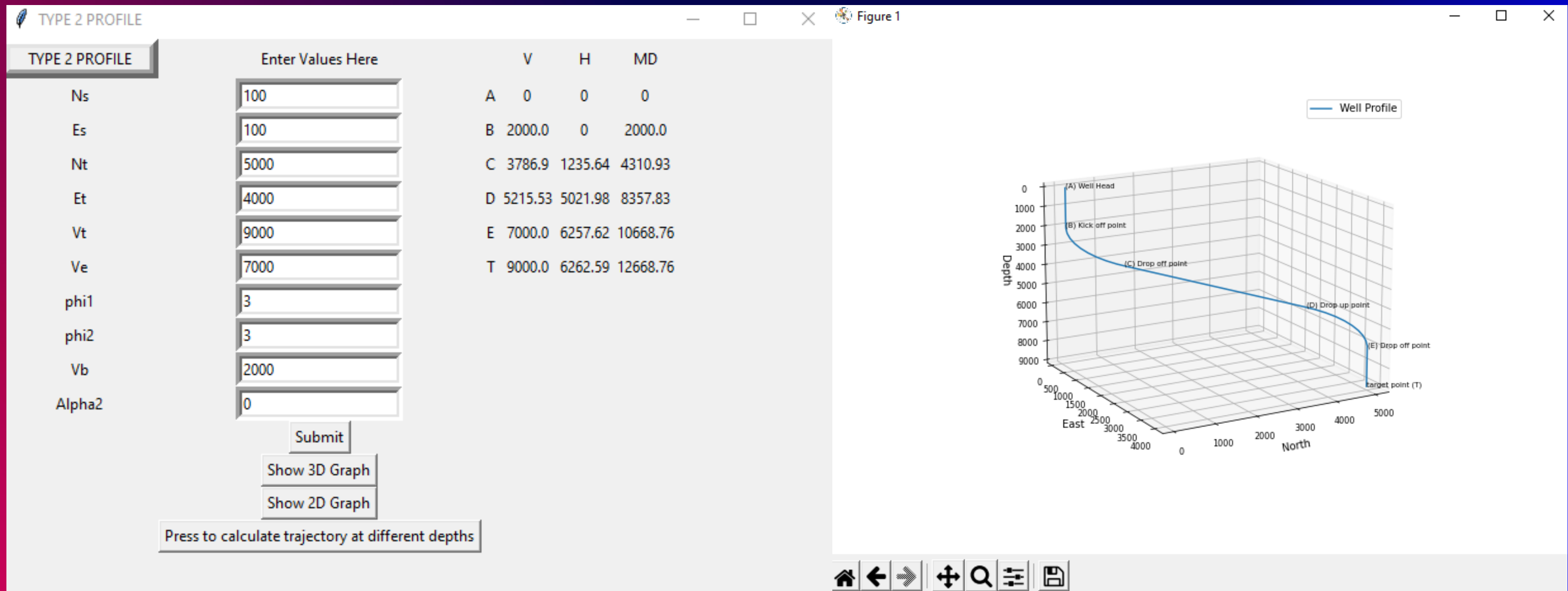
## HOME PAGE





# EARLIER WORK

- Mathematical Modelling of L, J, S, SINGLE, DOUBLE Buildup well profiles was done.



# OPTIMIZATION

**MEASURED  
DEPTH**

- Based on the user will input the coordinates and based on the measured depth of the 5 well profiles the least measured depth profile is chosen on the factor of drilling economics.

**WELL LOG  
DATA**

- Based on the coordinates and the Well-log data file it will plot & analyze the well logs and give identification of lithology by creating layers of lithology with increasing depth.

## BASED ON MEASURED DEPTH

- The user will input target coordinates, kick-off point, build-up, drop-off rate, and final inclination.

tk

Ht	2000	Phi1	3	MDt	
Vt	9000	Phi2	3	Pro1	9251.21
Ve	7000	Alpha1	30	Pro2	9488.91
Vb	1000	Alpha2	0	Pro3	8011.68
				Pro4A	10180.28
				Pro4B	7606.29

Submit

Minimum MDt is 7606.29



# WELL LOG DATASET

- **FIELD - VOLVE**
- **COMPANY - STATOIL PETROLEUM**
- **COUNTRY - NORWAY**

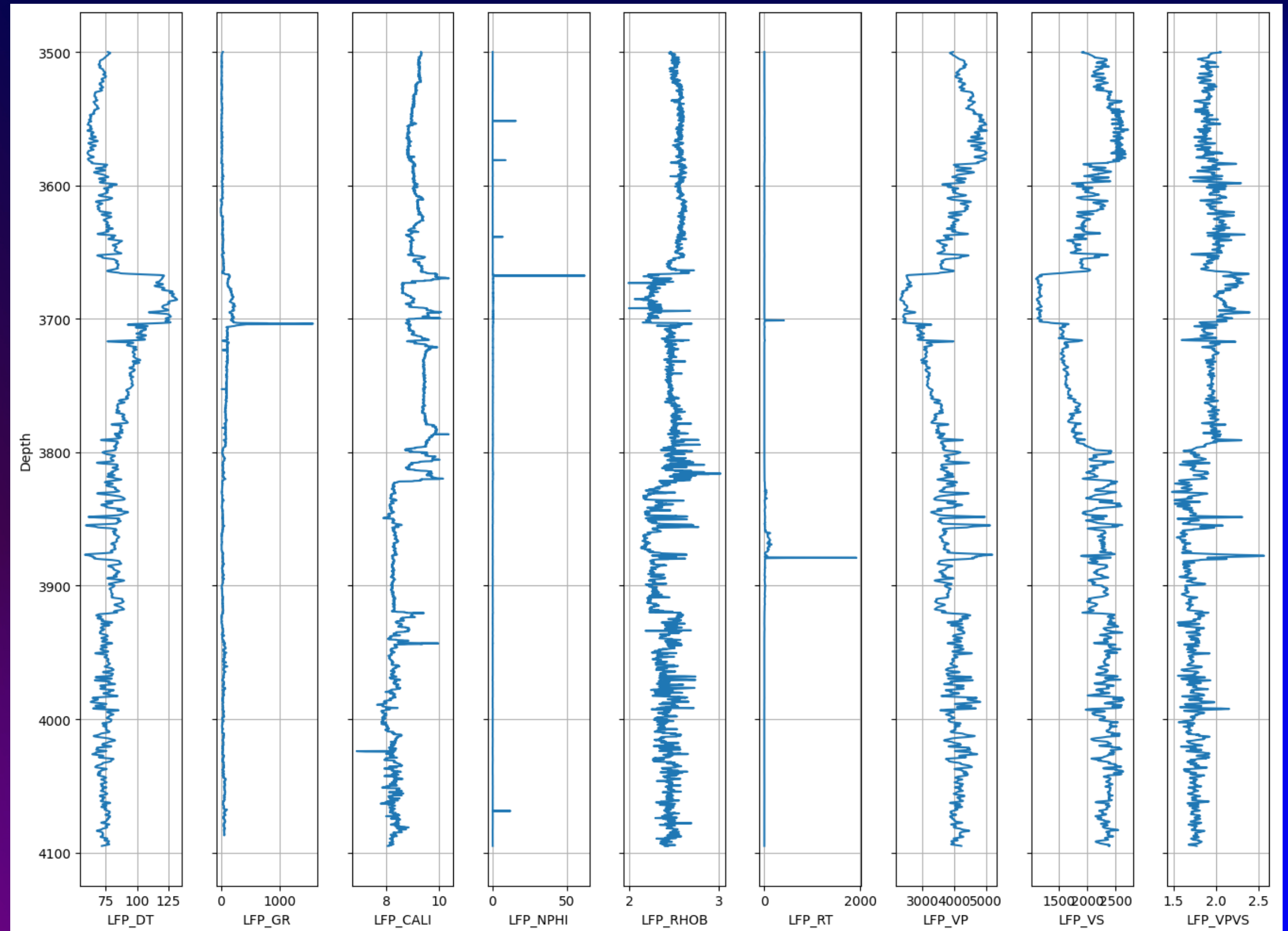
**Our Well-log data contains 3905 rows × 170 columns.**

- **Log ASCII Standard (LAS)** is a popular format for storing well-log information in the oil and gas industry. Logs are the physical properties of subsurface rocks measured through depth intervals.

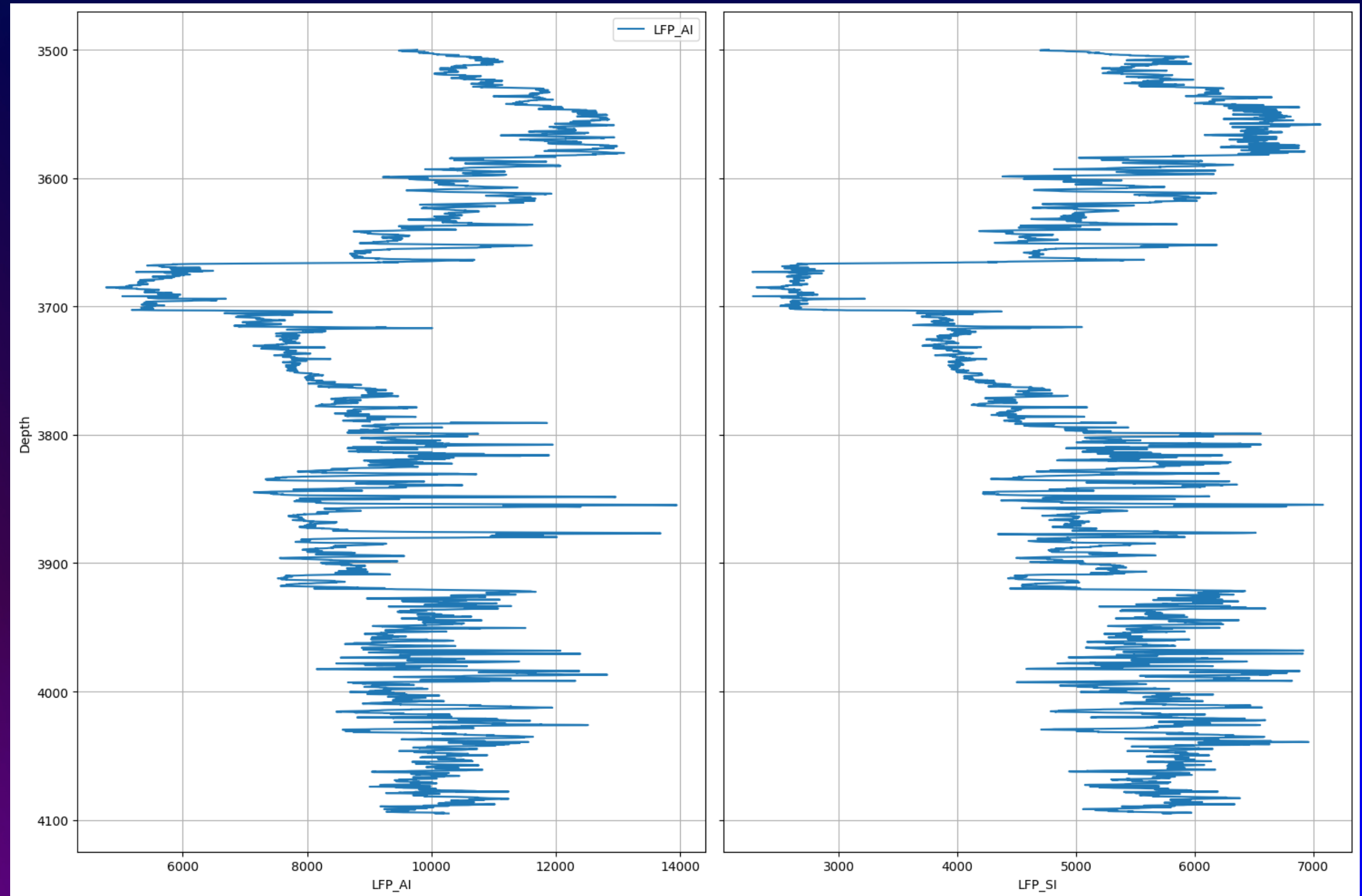


# WELL LOG PLOT

- Took these well logs for cumulative analysis for lithology identification and hydrocarbon zone identification.



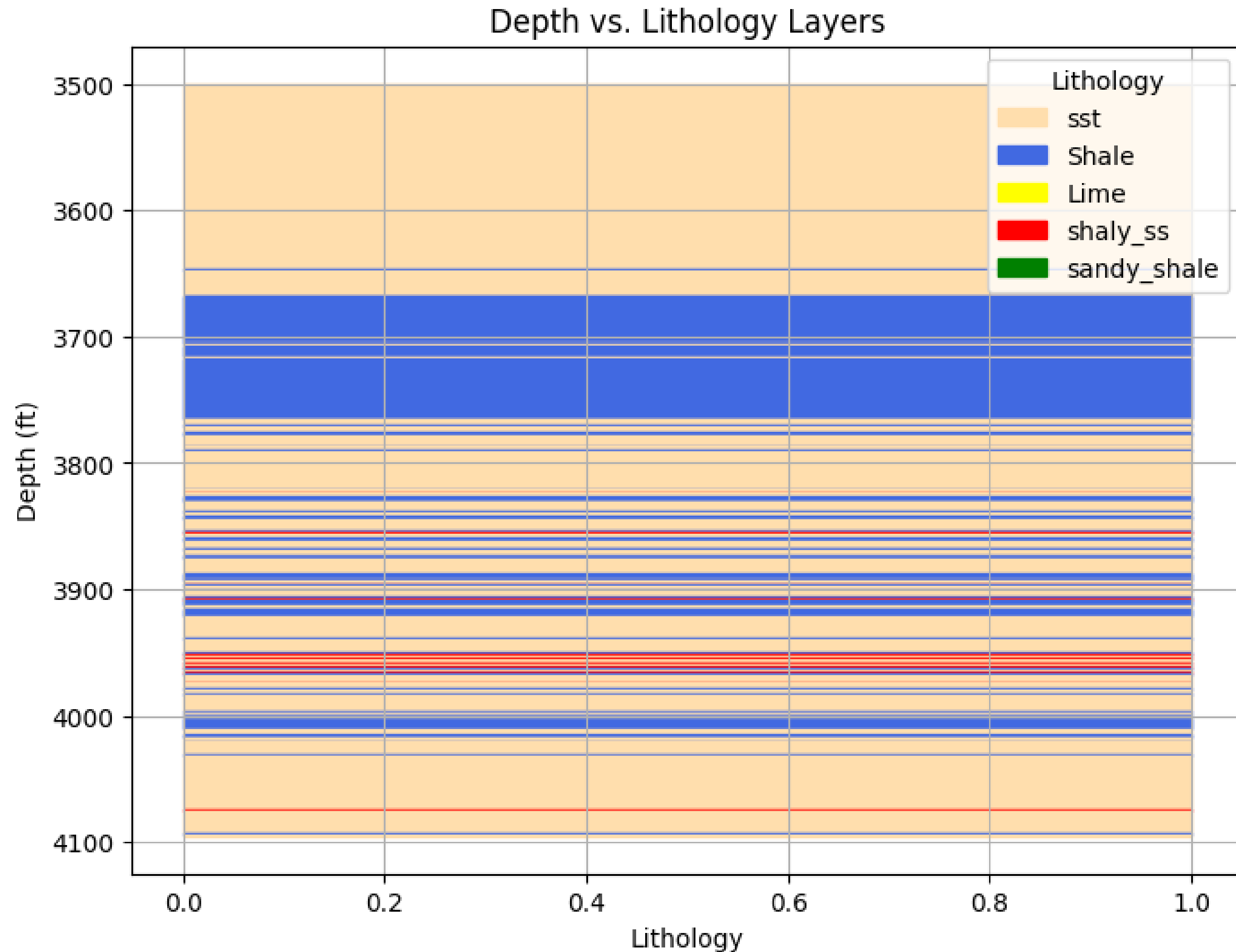
- The formation with very negative and very positive AI values shows that there is a very big density and wave velocity difference between the upper and lower formation which can be used to detect hydrocarbon (direct hydrocarbon indicator)



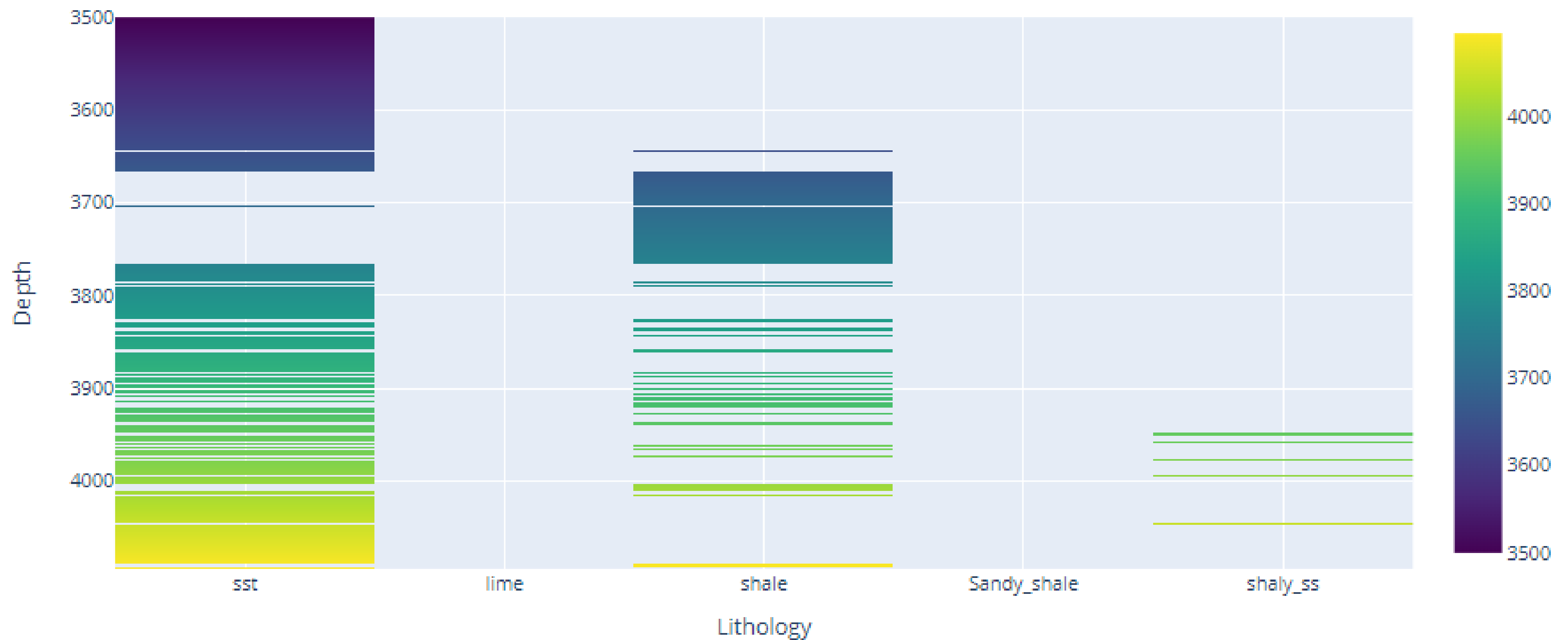


# LITHOLOGY IDENTIFICATION

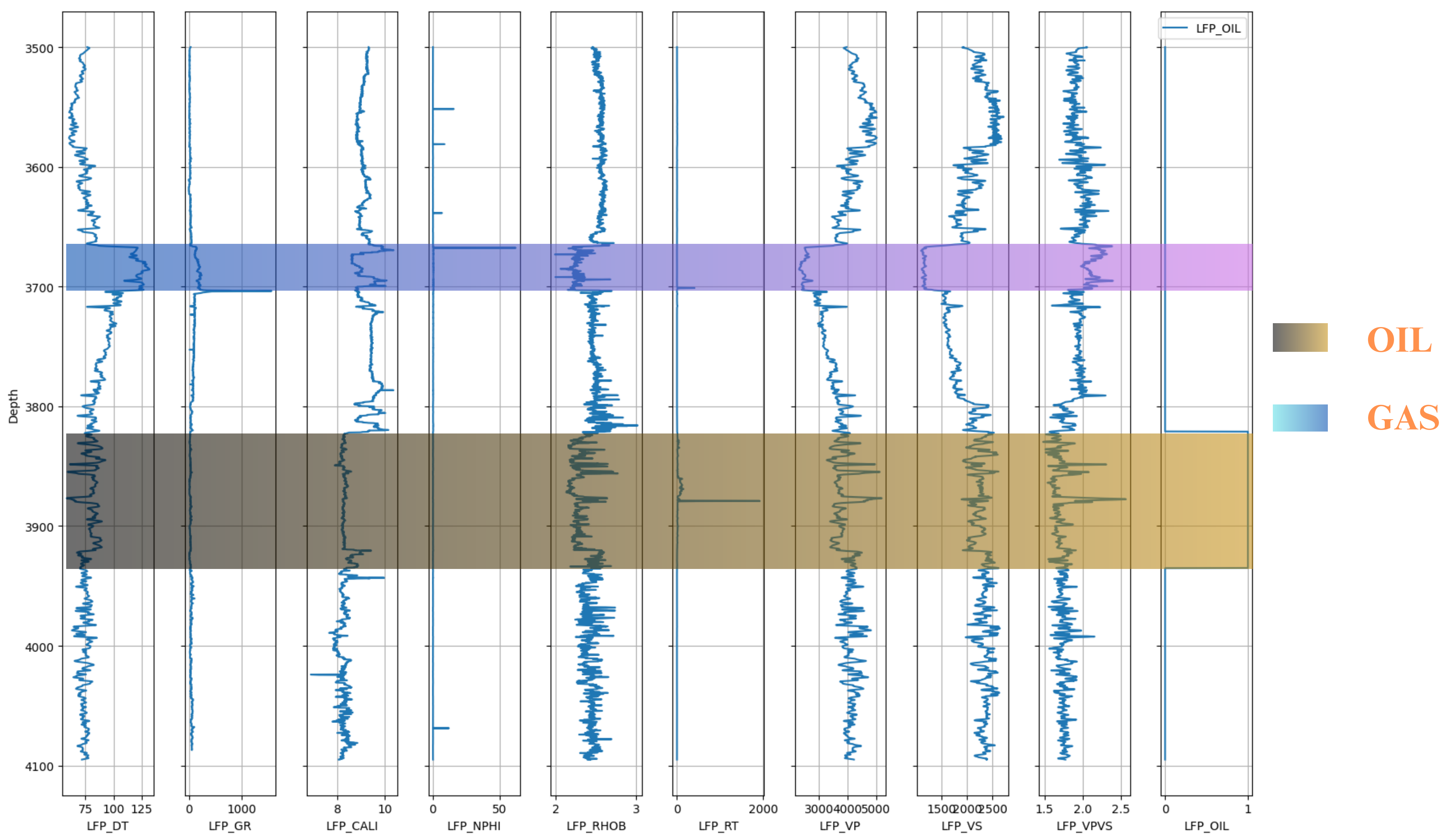
We are using 6 well logs for lithological identification for classifying Sandstone, Shale, Limestone, Shaly Sandstone, and Sandy Shale.




Logs vs. Depth







**Here user will input the surface, subsurface coordinates, and the well log dataset's las file will be uploaded and correspondingly it will show lithology.**

 Well Log File Input

TYPE optimize  
PROFILE

Enter Values Here

Ns	<input type="text" value="100"/>	las file  <input type="button" value="Browse"/>
Es	<input type="text" value="100"/>	
Nt	<input type="text" value="5000"/>	
Et	<input type="text" value="6000"/>	



# REFERENCES

- **Bourgoyne A.T. Millheim K. Chenevert M.E Young F.S (1986) Applied Drilling Engineering. Volume 2. SPE Textbook Series.**
- **AAPG WIKI**
- **Watt H. (2005) Drilling Engineering. Institute of Petroleum Engineering. Heriot-Watt University.**
- **Well Seeker Pro Manual. INNOVA Drilling & Intervention**
- **Python Tkinter Java T Point**

**-THANK YOU-**