DEPARTMENT OF PETROLEUM ENGINEERING

Ref. No.: PU/SOE/PET/EB/WPM/2022-23/CIR/01 Date: 16/12/2022

Circular

Academic Year: 2022 – 2023 **Course:** PET2024 **Semester:** 4th

Dear students of 4PET-1,

It is to inform you all that a "problem solving / numerical solving" activity for the course **PET2024 Wellbore Problems and Mitigation** is schedule on 26/12/2022, from 03:55 AM to 04:45 AM (OFFLINE MODE).

It is mandatory for all the student to remain present during the activity session and take part in numerical solving.

Dr. Abhinav Kumar
Instructor In-charge

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REPORT ON PROBLEM SOLVING

Circular Date and No.	Dtd: 16/12/2022 PU/SOE/PET/EB/WPM/2022-23/CIR/01	**Date of Event**	26/12/2022
Type of learning	Employability	**Event Type:**	Problem Solving
Mode of Event:	Offline	**No. of Participant(s):**	15
Course Code/Course Name	PET2024 Wellbore Problems and Mitigation		
Department	Department of Petroleum Engineering		
Instructor In charge	Dr. Abhinav Kumar Assistant Professor, Department of Petroleum Engineering		

Event objective	The event was conducted to test the knowledge of students on the topic related to the application of principle of superposition in petroleum industry with a primary objective of improving the problem-solving skills of students.
Topic discussed	Numerical on Kick Tolerance
Outcome of the event	i. Improvement in problem solving skill. ii. Improvement in identifying problem statement.
Assessment	i. Type of Assessment: Problem Solving ii. Task Assigned: As following parameters are given for a well: 9 5/8" casing =14,500 ft; Next TD = 17000 ft; Fracture Gradient (FG) at 9 5/8" shoe = 16 ppg; Temperature gradient = 0.02 F°/ft; Max. mud weight for next hole =14.5 ppg; Max formation pressure at next hole= 14 ppg; Assume next hole 8 ½" and there is 5" drillpipe from surface to TD. Also assume gas pressure gradient (G) = 0.1 psi/ft; Surface Temperature = 60 F°. Calculate a. Volume of the kick fluid at casing shoe. b. Kick tolerance volume without considering the temperature gradient. c. Kick tolerance volume with considering temperature gradient. d. Comment on the values of kick tolerance volume (i.e., with and without considering temperature) iii. Sample answers by students:

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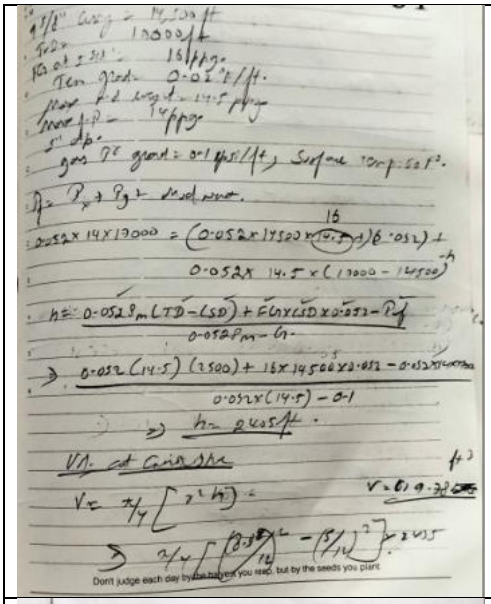

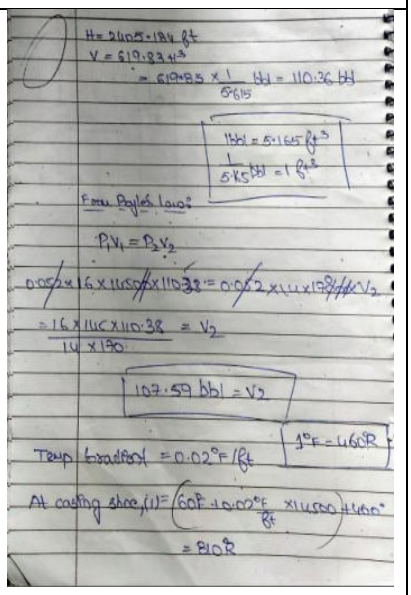

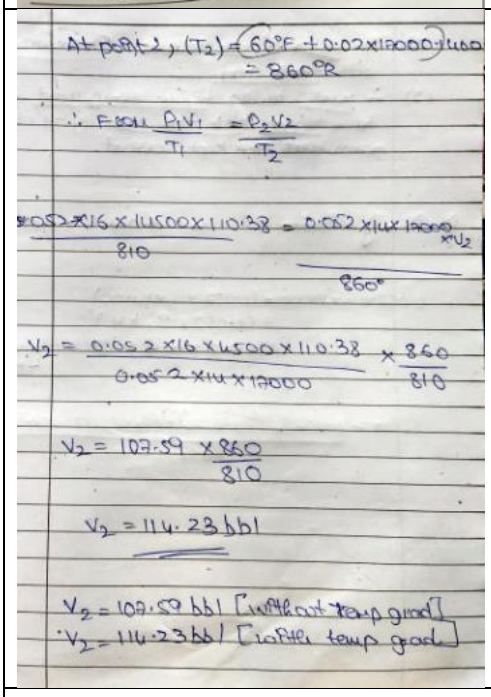

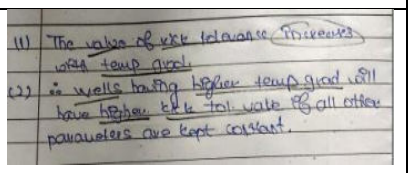

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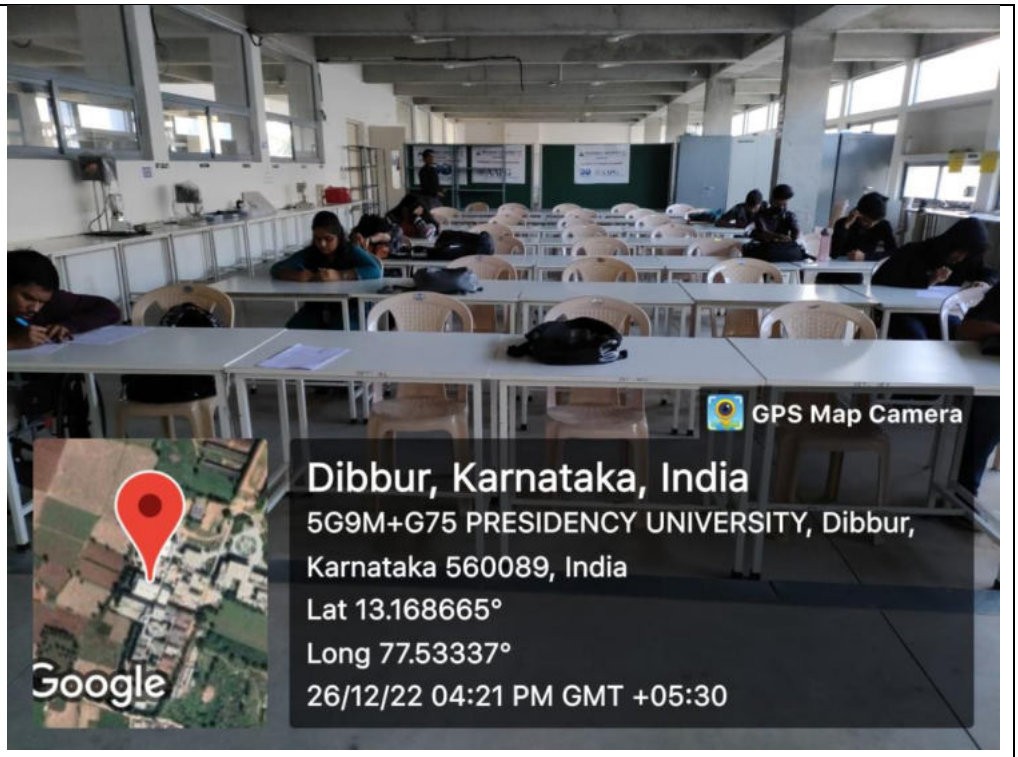
Event photo



Attendance sheet

Sl. No.	ID No.	Student Name	Attendance
1	20211PET0001	MOHAMED SAADULLAH S	P
2	20211PET0002	ROSHAN T	P
3	20211PET0004	BELIM MOH SAAD MOHAMMEDBHAI	P
4	20211PET0006	FAHAD ALI KHAN	P
5	20211PET0008	VANKALA JAI SPHOORTHI	P
6	20211PET0012	MOHAMED NAIF NIHAD ALI	P
7	20211PET0016	ASMA	P
8	20211PET0018	SANDEEP IYAGAR	P
9	20211PET0019	KIRAN EKIRAN	P
10	20211PET0021	MAYUR P	P

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		11	20211PET0022	YASHWANTH S	P
		12	20211PET0024	BOLLAMA REDDY HIMAVENKATA MANKANTHA	P
		13	20211PET0027	SYED USMAN	P
		14	20221LPE0001	Shaikh Tabish Riyazahmed	P
		15	20201PET0027	YARRAMSETTI CHAITANYA SRI	P

Signature of Instructor In charge
Dr. Abhinav Kumar
Assistant Professor
Department of Petroleum Engineering

Dr. Suman Paul
Professor and Head
Department of Petroleum Engineering

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Presidency University, Bengaluru
Itgalpur, Rajanakunte, Yelahanka, Bengaluru – 560064

DEPARTMENT OF PETROLEUM ENGINEERING

Ref. No.: PU/SOE/PET/EB/DAOGE/2021-22/CIR/01 Date: 12/05/2022

Circular

Academic Year: 2021 – 2022 **Course:** PET1003 **Semester:** 4th

Dear students of 4PET-1,

It is to inform you all that a "problem solving / numerical solving" activity for the course **PET1003 Data Analytics for Oil and Gas Exploration** is schedule on 17/05/2022 (OFFLINE MODE).

It is mandatory for all the student to remain present during the activity session and take part in numerical solving.

Mr. Utkarsh Lall
Instructor In-charge

REPORT ON PROBLEM SOLVING

Circular Date and No.	Dtd: 12/05/2022 PU/SOE/PET/EB/DAOGE/2021-22/CIR/01	**Date of Event**	17.05.2022
Type of learning	Employability	**Event Type:**	Problem Solving
Mode of Event:	Offline	**No. of Participant(s):**	13
Course Code/Course Name	PET1003 Data Analytics for Oil and Gas Exploration		
Department	Department of Petroleum Engineering		
Instructor In charge	Utkarsh Lall Assistant Professor, Department of Petroleum Engineering		

Event objective	The event was conducted to test the knowledge of students on the topic related to the Conditional Probability Problem in petroleum industry with a primary objective of improving the problem-solving skills of students.
Topic discussed	Conditional Probability Problem
Outcome of the event	i. Solve Conditional Probability Problem on Real Life Filed Data
Assessment	i. Type of Assessment: Problem Solving ii. Task Assigned: solve one problem iii. Sample report by student The graph mentioned below represents the porosity and permeability data for 20 wells. There are 2 events : one represent porosity is good and is greater than 15 percent, the other event represents the reservoir with good permeability . Here in the analysis of wells , good permeability means the permeability is greater than 200md . Calculate the probability of a reservoir where permeability is good and is already known with good porosity . Also, calculate the probability of a reservoir where the reservoir is known to have poor porosity but where permeability is expected to be high Figure: Production and pressure history of a well

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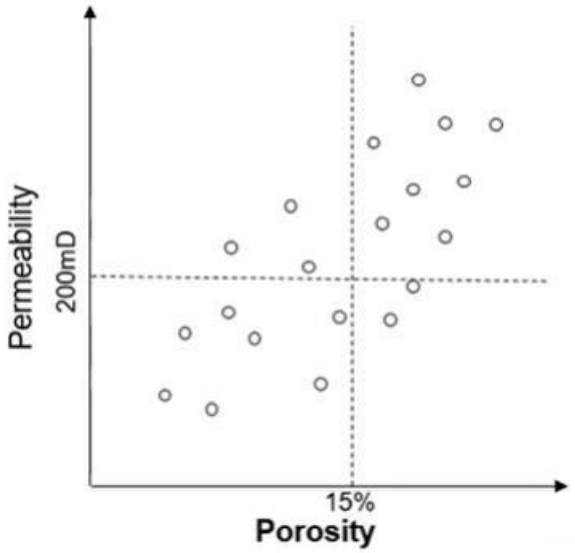
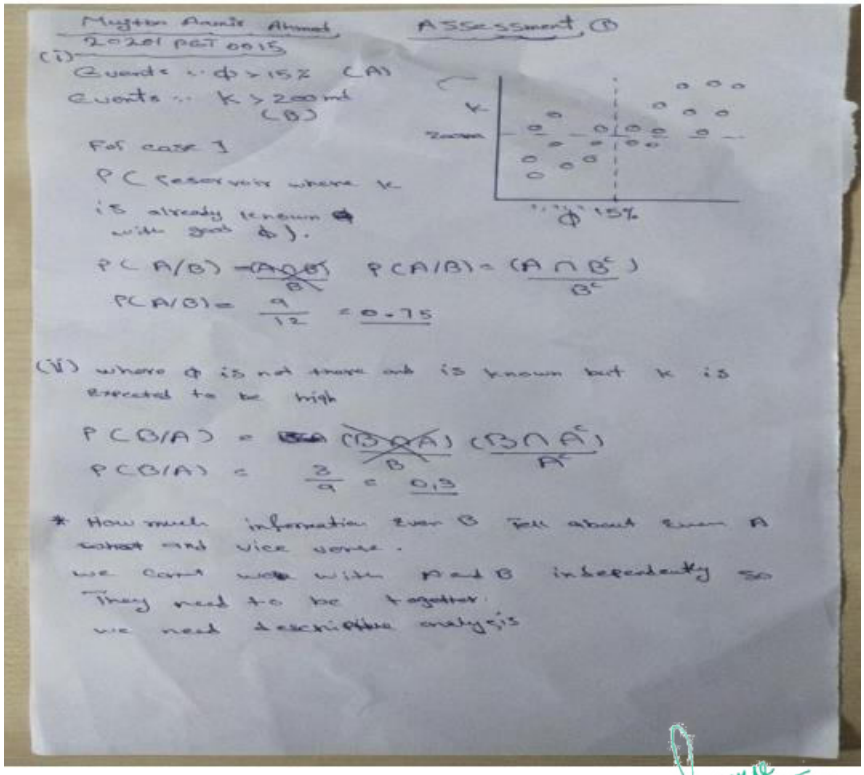


iv. Sample answers by students:



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Attendance sheet

Sl. No.	Student ID No	Name
1	20201PET0004	RACHAN BALAKRISHNA SHETTY
2	20201PET0006	PRAVEEN B
3	20201PET0008	NALLABHOTULA DUSHYANTH
4	20201PET0009	KOTISHWARAN V
5	20201PET0010	PRADEEP KUMAR RATHOD
6	20201PET0011	A M RIZWAN
7	20201PET0012	MOHAMMED SHAZAN
8	20201PET0015	MUJTBA AAMIR AHMED
9	20201PET0016	SIDHARTH MURALI
10	20201PET0017	BHOOMIKA SATISH
11	20201PET0023	PRATHIVRAJ S
12	20201PET0026	AJMAL AKBAR BABU
13	20201PET0034	KOMMINENI HEMANTH

Signature of Instructor In charge
Mr. Utkarsh Lall
Assistant Professor
Department of Petroleum Engineering

Dr. Suman Paul
Head
Department of Petroleum Engineering

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Itgalpur, Rajanakunte, Yelahanka, Bengaluru – 560064

DEPARTMENT OF PETROLEUM ENGINEERING

Ref. No.: PU/SOE/PET/SD/NGH/2022-23/CIR/01 Date: 10/12/2022

Circular

Academic Year: 2022 – 2023 **Course:** PET2017 **Semester:** 5th

Dear students of 6PET-1,

It is to inform you all that a "problem solving / numerical solving" activity for the course **PET2017 Natural Gas Hydrates** is schedule on 23/12/2022, from 10:40 AM to 11:30 AM (OFFLINE MODE).

It is mandatory for all the student to remain present during the activity session and take part in numerical solving.

Dr. Deepjyoti Mech

Instructor In-charge

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REPORT ON PROBLEM SOLVING

Circular Date and No.	Dtd: 10/12/2022 PU/SOE/PET/SD/NGH/2022-23/CIR/01	**Date of Event**	23.12.2022
Type of learning	Skill development	**Event Type:**	Problem Solving
Mode of Event:	Offline	**No. of Participant(s):**	13
Course Code/Course Name	PET2017 Natural Gas Hydrates		
Department	Department of Petroleum Engineering		
Instructor In charge	Dr. Deepjyoti Mech Assistant Professor, Department of Petroleum Engineering		

Event objective	The event was conducted to test the knowledge of students on the topic related to the application of kinetics studies of gas hydrates in petroleum industry with a primary objective of improving the problem solving skills of students.
Topic discussed	Kinetics of Gas Hydrates
Outcome of the event	i. Improvement in problem solving skill. ii. Improvement in identifying problem statement.
Assessment	i. Type of Assessment: Problem Solving ii. Task Assigned: A polymer is used to prevent the methane hydrate formation using 377.34 mL present inside the high pressure chamber at average temperature around 263.4 K with a volume of gas is 813 cm^3. Calculate all the parameters to verify the gas storage capacity of the hydrate structure for the initial and final pressure of 5371.79 kPa & 3608.669 kPa with an initial & final temperature of 1.5^{O}C & -9.6^{O}C. The following data can be used- *Pc=4596 kPa, Tc=190.45 K and w=0.0115*. iii. Sample answers by students:

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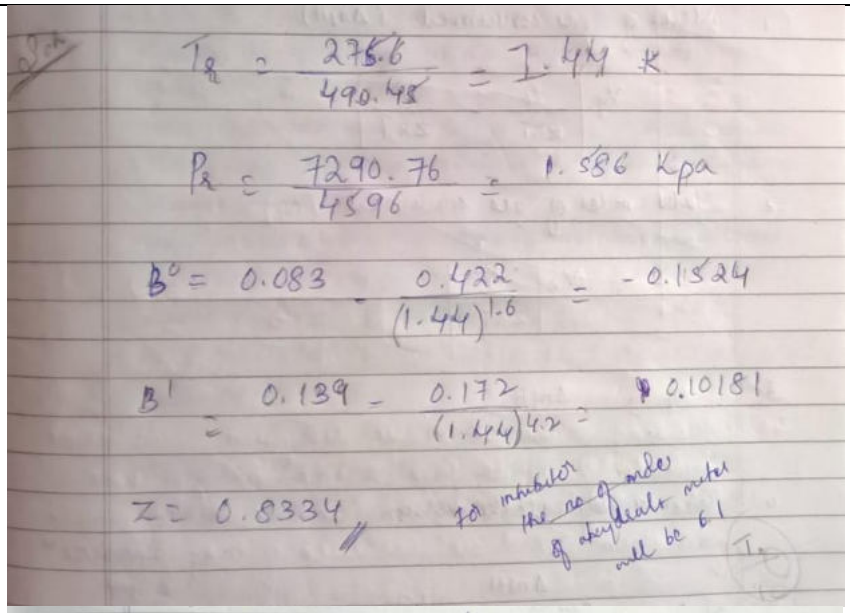

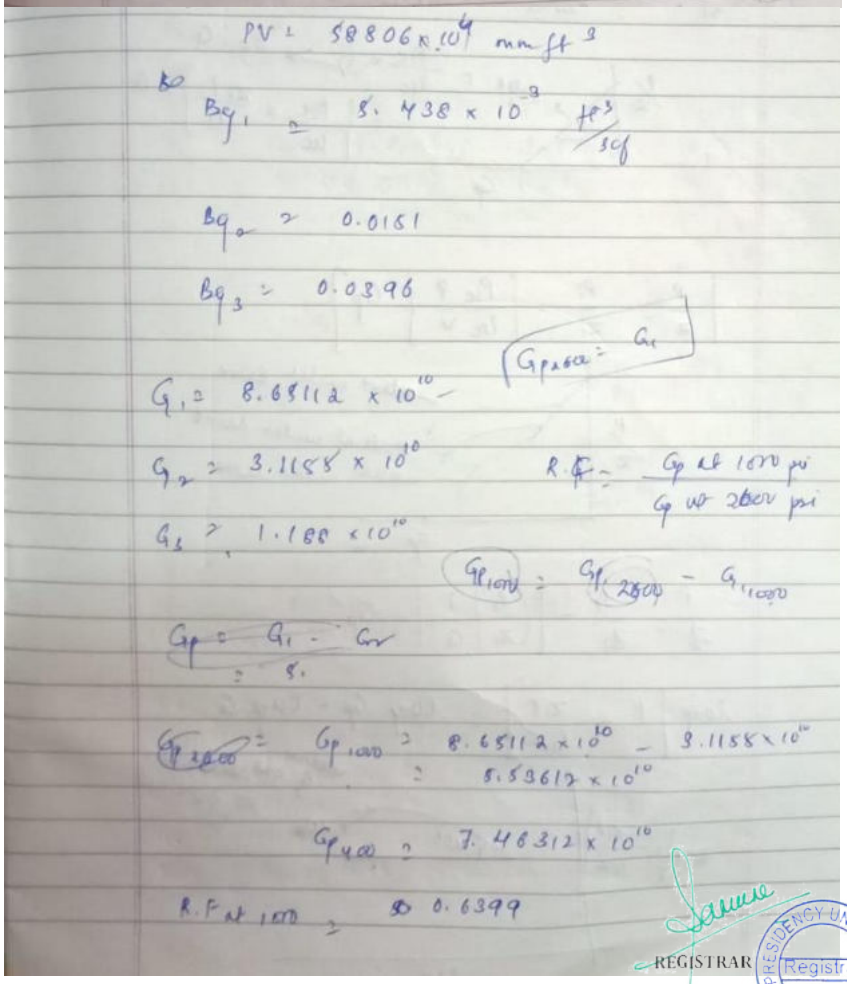

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Event photo

Attendance sheet

Sl. No.	ID No.	Student Name	Attendance
1	20201PET0001	SOHAEL K S	P
2	20201PET0009	KOTISHWARAN V	P
3	20201PET0010	PRADEEP KUMAR RATHOD	P
4	20201PET0014	ZAHEED AHMED	P
5	20201PET0016	SIDHARTH MURALI	P
6	20201PET0017	BHOOMIKA SATISH	P
7	20201PET0018	NUTHAN M S	P

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		8	20201PET0019	PRANAV. A	P
		9	20201PET0031	BANDLA HAREESH	P
		10	20201PET0033	SHEKAR	P
		11	20201PET9001	MOHAMMED SHAHID	P
		12	20191PET0009	C S NISHANT	P
		13	20211LPE0001	MUHAMMED SWALIH V P	P

Signature of Instructor In charge
Dr. Deepjyoti Mech
Assistant Professor
Department of Petroleum Engineering

Dr. Suman Paul
Professor and Head
Department of Petroleum Engineering

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DEPARTMENT OF PETROLEUM ENGINEERING

Ref. No.: PU/SOE/PET/EB/QMPOGI/2021-22/CIR/01 Date: 20/05/2022

Circular

Academic Year: 2021 – 2022 **Course:** PET2029 **Semester:** 4th

Dear students of 4PET-1,

It is to inform you all that a "problem solving / numerical solving" activity for the course **PET2029 Quality Management Practices in Oil and Gas Industry** is schedule on 14/06/2022 (ONLINE MODE).

It is mandatory for all the student to submit the asignment without fail.

Ms. Jain Mariyate Wilson
Instructor In-charge

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REPORT ON PROBLEM SOLVING

Circular Date and No.	Dtd: 20-05-2022 PU/SOE/PET/PS/2021-22/4PET1/CIR/01	**Date of Event**	14-06-2022
Type of learning	Skll devlopment	**Event Type:**	Problem Solving
Mode of Event:	Online	**No. of Participant(s):**	12
Course Code/Course Name	PET 2029 QUALITY MANAGEMENT PRACTICES IN OIL & GAS INDUSTRY		
Department	Department of Petroleum Engineering		
Instructor In charge	MS. Jain Mariyate Wilson Assistant Professor, Department of Petroleum Engineering		

Event objective	The event was conducted to test the knowledge of students on the topic related to the application of Reservoir Management for field optimization in petroleum industry with a primary objective of improving the problem-solving skills of students.
Topic discussed	Reservoir Management for field optimization
Outcome of the event	i. It facilitates the exploration of a real issue within a defined context, using a variety of data sources
Assessment	i. Type of Assessment: solve the case study with suitable parameters ii. Task Assigned: Analyze the problem and solve Problem 1: Reservoir management might also be thought of as the decision-making process that matches the plan to the reservoir at hand and to the business and technological context under which the operator manages the reservoir. The range of possible plans is wide, and building the optimum reservoir management plan depends on the operator's knowledge. As per the reference paper data provided, explain how the reservoir optimization of East Randolph Field, Eastern OH is done. Also, explain the factors that heavily influenced the development of reservoir management plan for East Randolph field. iii. Sample answers by students:

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PET:2029 Quality Management Practices

Case Study on Reservoir Management

What is reservoir management? What is its importance?

Reservoir management is different things to different people, but it is the way an operator chooses to manage assets, Thakur defined reservoir management as the "judicious use of available resources to maximize economic recovery."

Other definitions, such as that offered by Wiggins and Startzman,3 view reservoir management as an "application of state-of-the-art technology to a known reservoir system within a given management environment."

Reservoir management might also be thought of as the decision-making process that matches the plan to the reservoir at hand and to the business and technological context under which the operator manages the reservoir. The range of plans is wide, and building the optimum reservoir management plan depends on the operator's knowledge of

-The reservoir and its facilities.

-The availability and use of both common and state of the art technologies.

-The general business environment.

-The company's business context and attitudes.

The reservoir management plan itself may specify a condition or set of conditions that indicate when the plan should be reevaluated. These criteria may include such items as cumulative volume, relative volume, or rate of production or injection of a specified fluid, passage of a stated period, or reaching a certain stage of reservoir development.

What are various management techniques that have been included or implemented in future for reservoir optimization?

East Randolph Field, Eastern OH. Since 1992, PEP Drilling Company and Belden and Blake Corporation have developed this unique but significant oil reservoir in the Cambrian Rose Run formation in Portage County, OH. One of few fields producing oil from the Rose Run, the East Randolph field covers about 1,500 acres, lies at a depth of about 7,200 R, and contains an average of 15 ft of pay in the upper three of five marginal marine sand zones typically present.

The field contains just over 30 wells and had produced about 450,000 bbl. of 42° API oil and 1.2 Bcfg as of June 1996.

Two factors heavily influenced the development of the reservoir management plan for East Randolph field: The field has been and continues to be developed by small independent operators. The proposed strategy included identifying optimum development and infill well locations, evaluating viable improved recovery process options, and defining related operational and facility requirements. Additional strategies addressed problems with field operations, such as paraffin buildup, hydraulic fracture stimulation, pumping system optimization, and production treatment requirements.

How Reservoir Characterization?

Reservoir characterization played a significant role in arriving at the reservoir management plan, particularly in selecting the highest priority targets, i.e., defining development and infill well locations and selecting an optimum secondary recovery method. The team performed a series of incremental and sometimes iterative steps to analyze existing data, identify data insentiences, obtain, and incorporate latest information into the emerging model, and test the predictive limits of the model before arriving at the final reservoir characterization model. The operator gained a better estimate of the resources contained in the East Randolph reservoir because of this research. OOIP is now thought to be at least twice as high as before. Estimate prior to the start of the project This revelation will have a significant impact on everyone. Field development and recovery initiatives in the future, What the operator discovered about the company's internal structure layering, fluid distribution, and other aspects of the reservoir. The ability to continue development through expansion and infill drilling, as well as into the secondary recovery phase, will be aided by the presence of faults and fractures.

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Attendance sheet	1	20201PET0001	SOHAEL K S	Submitted
	2	20201PET0006	PRAVEEN B	Submitted
	3	20201PET0009	KOTISHWARAN V	Submitted
	4	20201PET0011	A M RIZWAN	Submitted
	5	20201PET0012	MOHAMMED SHAZAN	Submitted
	6	20201PET0018	NUTHAN M S	Submitted
	7	20201PET0021	R JANARDHAN REDDY	Submitted
	8	20201PET0029	PAVAN GOUD	Submitted
	9	20201PET0030	AQIB AHMED SHARIEEF	Submitted
	10	20201PET0033	SHEKAR	Submitted
	11	20201PET9001	MOHAMMED SHAHID	Submitted
	12	20201PET9002	NITIN	Submitted

Signature of Instructor In charge
MS. Jain Mariyate Wilson

Assistant Professor

Department of Petroleum Engineering

Dr. Suman Paul
Head
Department of Petroleum Engineering

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DEPARTMENT OF PETROLEUM ENGINEERING

Ref. No.: PU/SOE/PET/EB/AWE/2022-23/CIR/01 Date: 07/10/2022

Circular

Academic Year: 2022 – 2023 **Course:** PET3004 **Semester:** 5th

Dear students of 4PET-1,

It is to inform you all that a "problem solving / numerical solving" activity for the course **PET3004 Advanced Well Engineering (AWE)** is schedule on 14/10/2022 (OFFLINE MODE).

It is mandatory for all the student to remain present during the activity session and take part in numerical solving.

Dr. Kalpajit Hazarika
Instructor In-charge

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REPORT ON PROBLEM SOLVING

Circular Date and No.	Dtd: 07/10/2022 PU/SOE/PET/EB/AWE/2022-23/CIR/01	**Date of Event**	14/10/2022
Type of learning	Skill development	**Event Type:**	Problem Solving
Mode of Event:	Offline	**No. of Participant(s):**	14
Course Code/Course Name	PET3004/Advanced Well Engineering (AWE)		
Department	Department of Petroleum Engineering		
Instructor In charge	Dr. Kalpajit Hazarika Assistant Professor, Department of Petroleum Engineering		

Event objective	The event was conducted to test the knowledge of students on the topic related to the application of determination of safety factor in drilling in petroleum industry with a primary objective of improving the problem-solving skills of students.
Topic discussed	Determination of safety factor in drilling
Outcome of the event	i. Improvement in problem solving skill. ii. Improvement in identifying problem statement.
Assessment	i. Type of Assessment: Problem Solving ii. Task Assigned: **Problem 1**: If 10,000ft of drill pipe is used, determine the max collapse pressure that can be encountered and the resulting safety factor. The mud density is 75pcf. If the fluid level inside the drill pipe drops to 6000ft below the rotary table, determine the new safety factor for grade- X95 **Problem 2**: Assuming 10,000ft of grade X95 drill pipe has been selected, weight of dp = 19.5ft, Length of dc= 600ft, weight of dc is 160 and BF= 0.84. (i) Determine the safety factor during drilling (ii) Determine the magnitude of shock loading (iii) Determine safety factor when shock loading is included Figure: Production and pressure history of a well iii. Sample answers by students:

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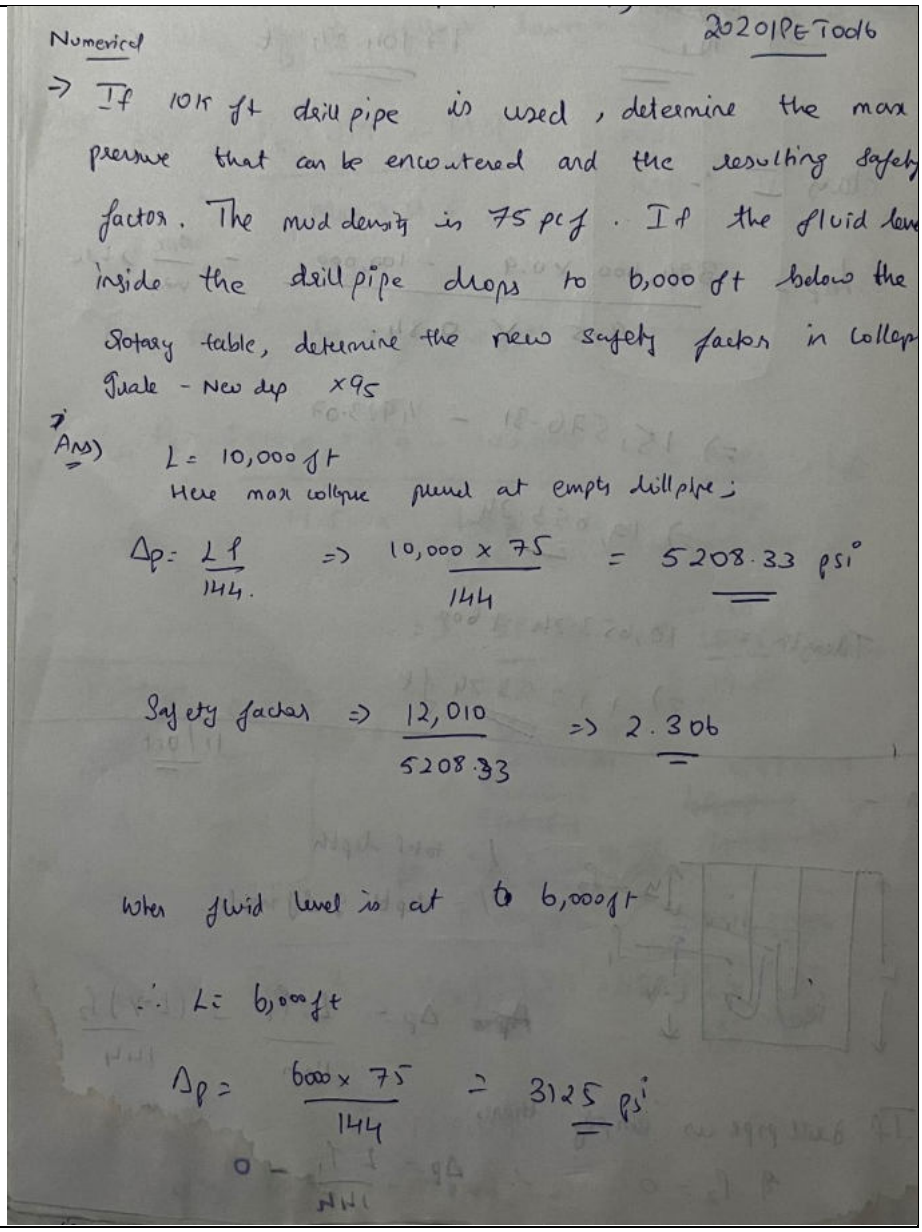

Numerical 2020IPETod6

→ If 10k ft drill pipe is used, determine the max pressure that can be encountered and the resulting safety factor. The mud density is 75 pcf. If the fluid level inside the drill pipe drops to 6,000 ft below the Rotary table, determine the new safety factor in collapse Scale - New dep x95

Ans) L = 10,000 ft

Here max collapse pressure at empty drillpipe;

$\Delta p = \frac{Lf}{144} \Rightarrow \frac{10,000 \times 75}{144} = 5208.33$ psi

Safety factor $\Rightarrow \frac{12,010}{5208.33} \Rightarrow 2.306$

When fluid level is at 6,000 ft

∴ L = 6,000 ft

$\Delta p = \frac{6000 \times 75}{144} = 3125$ psi

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Safety factor => 12 010 / 3121 => 3.84

Shock loading

→ casing design

F_s = 3200 × wt drill pipe

20201PET0016

Assumig 10,000ft of grade x95 drill pipe has been selected. wt of dillpipe = 19.5 ft, L_{dc} = 600 ft wt of bit collar is 160. B.F = 0.84. Determine the safety factor duig drillig. (ii) Determine the magnitude of shock loads. (iii) Determie safety factor when shock load is included.

$$S.F = \frac{Y.P \times 0.9}{(L_{dp} w_{dp} + L_{dc} w_{dc}) \times B.F}$$

$$\Rightarrow \frac{501090 \times 0.9}{(10{,}000 \times 19.5 + 600 \times 160) \times 0.84}$$

=> 1.8463

(ii) F_s = 3200 × wt of drill pipe

F_s = 62,400 lb

$$S.F \Rightarrow \frac{Y.P \times 0.9}{(L_{dp} w_{dp} + L_{dc} w_{dc}) \times B.F + F_s}$$

=> 1.33

Attendance sheet

1	20201PET0004	RACHAN BALAKRISHNA SHETTY	P
2	20201PET0006	PRAVEEN B	P
3	20201PET0008	NALLABHOTULA DUSHYANTH	P
4	20201PET0009	KOTISHWARAN V	P
5	20201PET0011	A M RIZWAN	P
6	20201PET0016	SIDHARTH MURALI	P
7	20201PET0017	BHOOMIKA SATISH	P
8	20201PET0021	R JANARDHAN REDDY	P
9	20201PET0023	PRATHIVRAJ S	P
10	20201PET0029	PAVAN GOUD	P
11	20201PET0030	AQIB AHMED SHARIEEF	P
12	20201PET0031	BANDLA HAREESH	P
13	20201PET0034	KOMMINENI HEMANTH	P
14	20191PET0011	Fayas Pasha	

Signature of Instructor In charge
Dr. Kalpajit Hazarika
Assistant Professor
Department of Petroleum Engineering

Dr. Suman Paul
Professor and Head
Department of Petroleum Engineering

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DEPARTMENT OF PETROLEUM ENGINEERING

Ref. No.: PU/SOE/PET/SD/NGRE/2022-23/CIR/01 Date: 08/12/2022

Circular

Academic Year: 2022 – 2023 **Course:** PET3009 **Semester:** 5th

Dear students of 6PET-1,

It is to inform you all that a "problem solving / numerical solving" activity for the course **PET3009 Natural Gas Reservoir Engineering** is schedule on 19/12/2022, from 3:00 PM to 4:00 PM (OFFLINE MODE).

It is mandatory for all the student to remain present during the activity session and take part in numerical solving.

Dr. Deepjyoti Mech

Instructor In-charge

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REPORT ON PROBLEM SOLVING

Circular Date and No.	Dtd: 08/12/2022 PU/SOE/PET/SD/NGRE/2022-23/CIR/01	**Date of Event**	19.12.2022
Type of learning	Skill development	**Event Type:**	Problem Solving
Mode of Event:	Offline	**No. of Participant(s):**	13
Course Code/Course Name	PET3009 Natural Gas Reservoir Engineering		
Department	Department of Petroleum Engineering		
Instructor In charge	Dr. Deepjyoti Mech Assistant Professor, Department of Petroleum Engineering		

Event objective	The event was conducted to test the knowledge of students on the topic related to the application of Inflow Performance Relationship (IPR) curve in petroleum industry with a primary objective of improving the problem solving skills of students.
Topic discussed	IPR Construction
Outcome of the event	i. Improvement in problem solving skill. ii. Improvement in identifying problem statement.
Assessment	i. Type of Assessment: Problem Solving ii. Task Assigned: Construct IPR of a vertical well in an unsaturated oil reservoir using generalized Vogel's equation. The following data are given: Porosity, f = 0.25 Effective horizontal permeability, k = 100 md Pay zone thickness, h = 55 ft Reservoir pressure, p = 5,000 psia Bubble point pressure, pb = 3,000 psia Fluid formation volume factor, Bo = 1:2 Fluid viscosity, mo = 1.8 cp. Total compressibility, ct = 0:000013 psi^{-1} Drainage area, A = 640 acres (re ¼ 2,980 ft) Wellbore radius, rw = 0.328 ft Skin factor, S = 5.5. iii. Sample answers by students:

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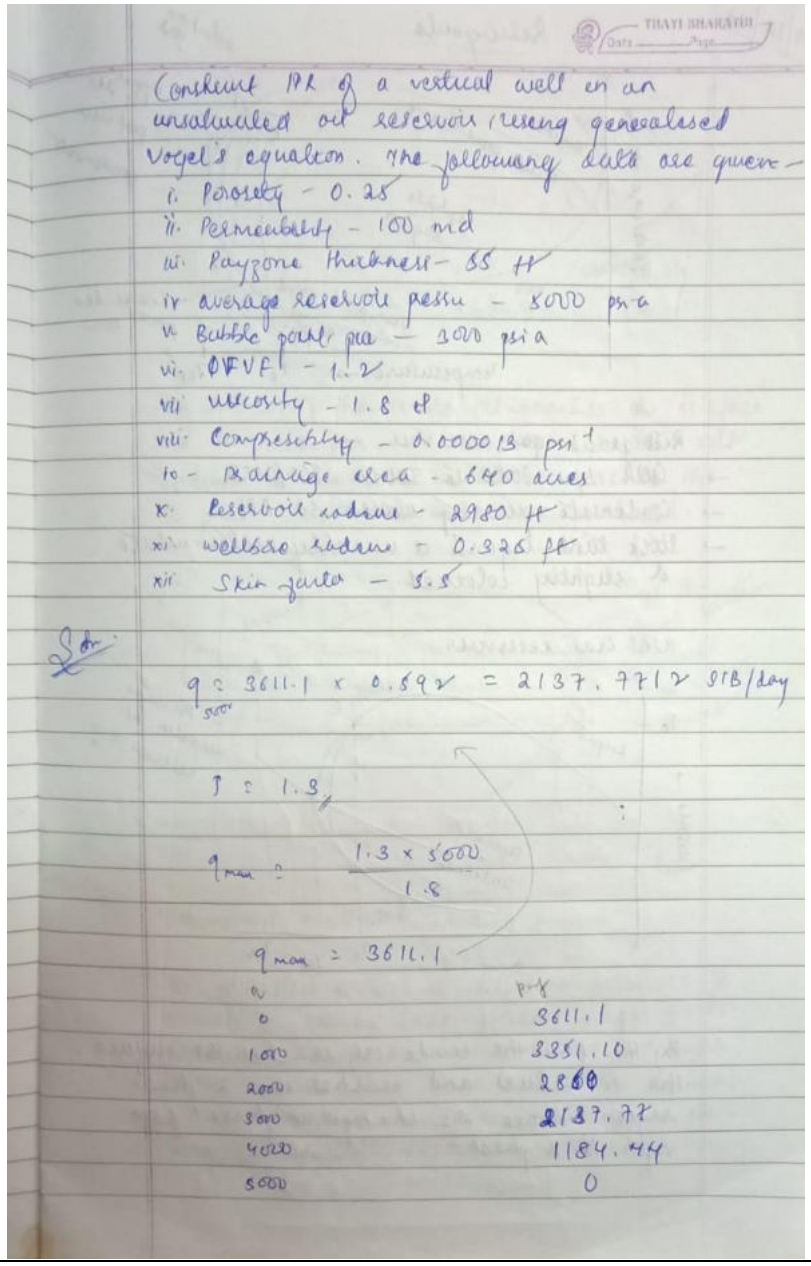

Consider IPR of a vertical well in an unsaturated oil reservoir using generalised Vogel's equation. The following data are given –

i. Porosity – 0.25
ii. Permeability – 100 md
iii. Payzone thickness – 55 ft
iv average reservoir pressure – 5000 psia
v. Bubble point pressure – 3000 psia
vi. OFVF – 1.2
vii viscosity – 1.8 cP
viii. Compressibility – 0.000013 psi^{-1}
ix – Drainage area – 640 acres
x. Reservoir radius – 2980 ft
xi wellbore radius – 0.326 ft
xii Skin factor – 5.5

$q_{500} = 3611.1 \times 0.592 = 2137.7712$ STB/day

J = 1.3

$q_{max} = \frac{1.3 \times 5000}{1.8}$

$q_{max} = 3611.1$

q	P-x
0	3611.1
1000	3351.10
2000	2880
3000	2137.77
4000	1184.44
5000	0

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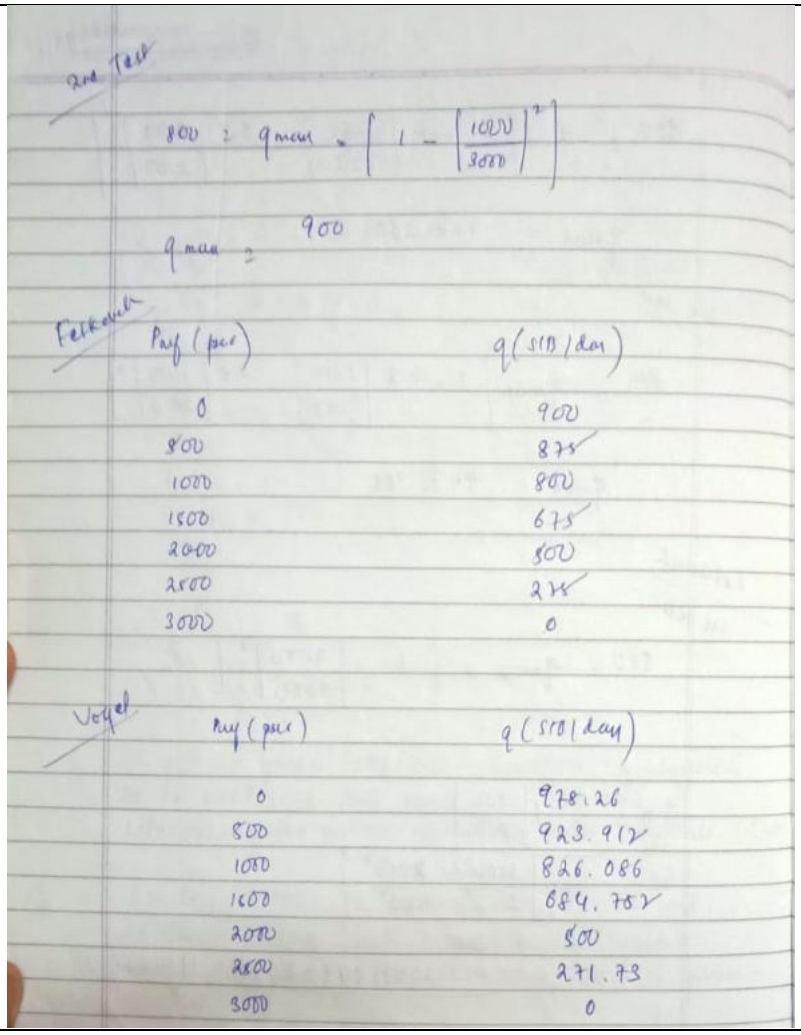

2nd Test

$800 : q_{max} = \left[1 - \left[\frac{1000}{3000}\right]^2\right]$

$q_{max} = 900$

Fetkovich

Pwf (psi)	q (STB/day)
0	900
800	875
1000	800
1500	675
2000	500
2500	275
3000	0

Vogel

Pwf (psi)	q (STB/day)
0	978.26
500	923.917
1000	826.086
1600	684.757
2000	500
2500	271.73
3000	0

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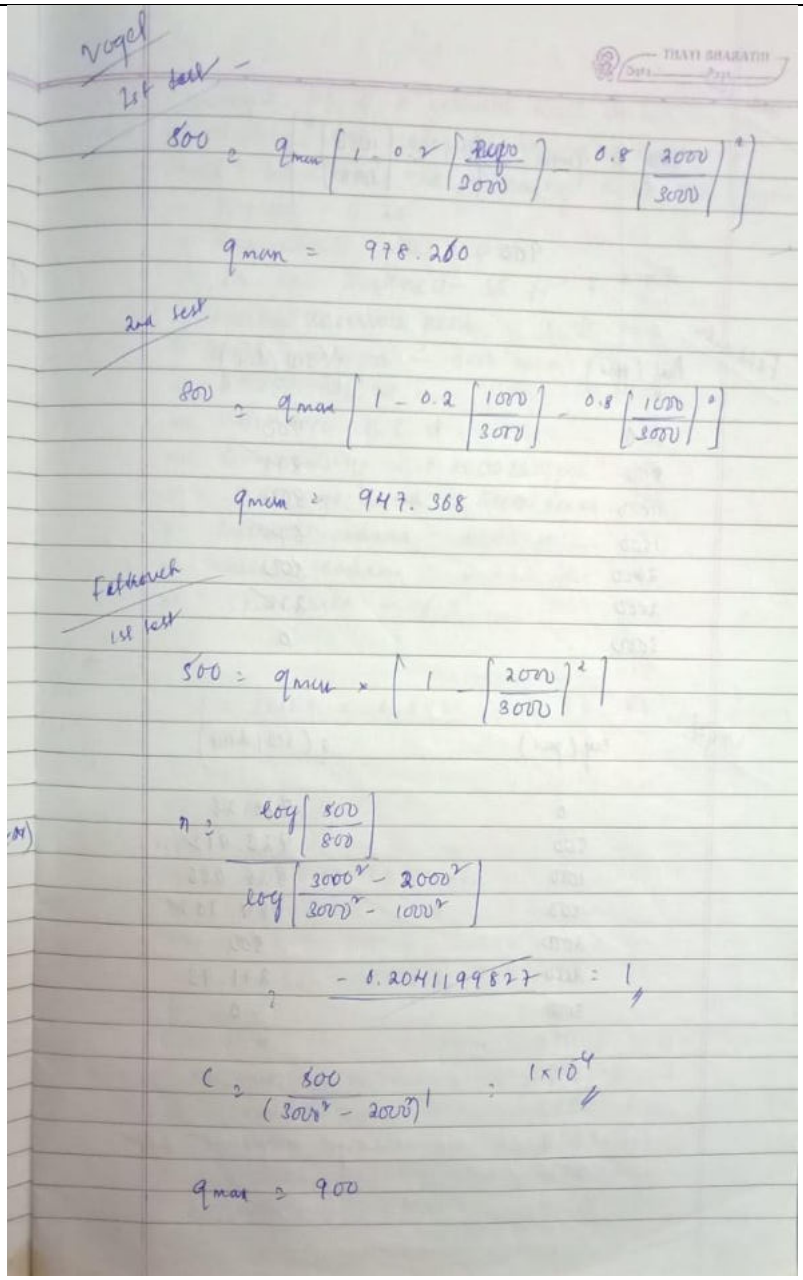
Vogel
1st test
800 = qmax [1 - 0.2 (Pwfo/2000) - 0.8 (2000/3000)^2]
qmax = 978.280
2nd test
800 = qmax [1 - 0.2 (1000/3000) - 0.8 (1000/3000)^2]
qmax = 947.368
Fetkovich
1st test
500 = qmax x [1 - (2000/3000)^2]
n = log(800/800) / log(3000^2 - 2000^2 / 3000^2 - 1000^2)
= -0.204119827 = 1
C = 800 / (3000^2 - 2000^2)^1 = 1x10^-4
qmax = 900

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Event photo

Attendance sheet

Sl. No.	ID No.	Student Name	Attendance
1	20201PET0001	SOHAEL K S	P
2	20201PET0010	PRADEEP KUMAR RATHOD	P
3	20201PET0012	MOHAMMED SHAZAN	P
4	20201PET0014	ZAHEED AHMED	P
5	20201PET0015	MUJTBA AAMIR AHMED	P
6	20201PET0018	NUTHAN M S	P
7	20201PET0019	PRANAV. A	P
8	20201PET0022	MOHAMMED SHADIM D K	P
9	20201PET0026	AJMAL AKBAR BABU	P
10	20201PET0033	SHEKAR	P

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		11	20201PET9001	MOHAMMED SHAHID	P
		12	20191PET0009	C S NISHANT	P
		13	20211LPE0001	MUHAMMED SWALIH V P	P

Signature of Instructor In charge
Dr. Deepjyoti Mech
Assistant Professor
Department of Petroleum Engineering

Dr. Suman Paul
Professor and Head
Department of Petroleum Engineering

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DEPARTMENT OF PETROLEUM ENGINEERING

Ref. No.: PU/SOE/PET/EB/IFDP/2022-23/CIR/01 Date: 16/02/2023

Circular

Academic Year: 2022 – 2023 **Course:** PET2018 **Semester:** 6th

Dear students of 6PET-1,

It is to inform you all that a "problem solving / numerical solving" activity for the course **PET2018 Integrated Field Development and Planning** is schedule on 03/03/2023, from 10:50 AM to 11:40 AM (OFFLINE MODE).

It is mandatory for all the student to remain present during the activity session and take part in numerical solving.

Dr. Abhinav Kumar
Instructor In-charge

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REPORT ON PROBLEM SOLVING

Circular Date and No.	Dtd: 16/02/2023 PU/SOE/PET/EB/IFDP/2022-23/CIR/01	**Date of Event**	03/03/2023
Type of learning	Employability	**Event Type:**	Problem Solving
Mode of Event:	Offline	**No. of Participant(s):**	14
Course Code/Course Name	PET2018 Integrated Field Development and Planning		
Department	Department of Petroleum Engineering		
Instructor In charge	Dr. Abhinav Kumar Assistant Professor, Department of Petroleum Engineering		

Event objective	The event was conducted to test the knowledge of students on the topic related to the application of principle of superposition in petroleum industry with a primary objective of improving the problem-solving skills of students.
Topic discussed	Numerical problems on porosity and permeability
Outcome of the event	i. Improvement in problem solving skill. ii. Improvement in identifying problem statement.
Assessment	i. Type of Assessment: Problem Solving ii. Task Assigned: Being a petroleum engineers you have been given the following data of core (obtained from sidewall coring method): Weight of the clean dried core sample in air: W_t (dry) =20.0 gm; Weight of the core sample saturated with water: W_t (sat) =22.5 gm; Density of water: ρ_w=1.0 gm/cc; diameter and length of the core sample is 2.34 cm. Estimate the pore volume and porosity of the core sample. iii. Sample answers by students:

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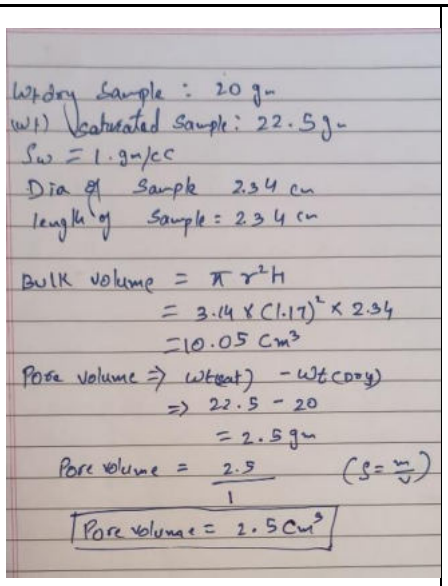
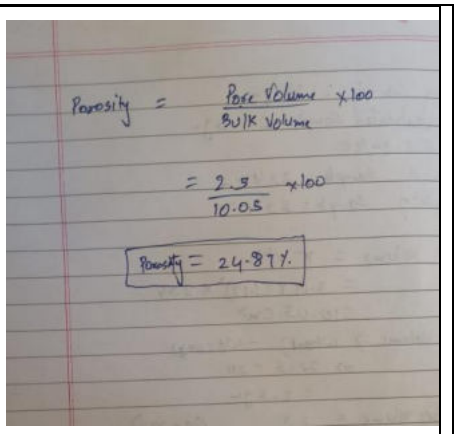
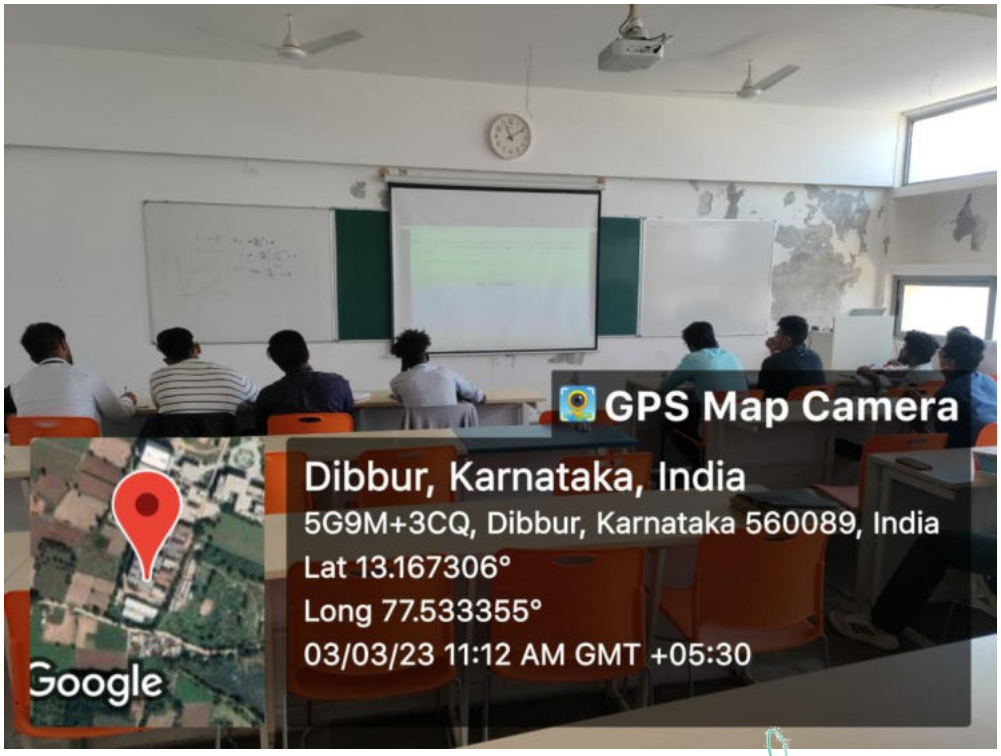




Event photo



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		Sl. No.	ID No.	Student Name	Attendance
Attendance sheet		1	20191PET0011	FAYAZ PASHA	P
		2	20201PET0004	SHETTY RACHAN BALAKRISHNA	P
		3	20201PET0008	NALLABHOTULA DUSHYANTH	P
		4	20201PET0009	KOTISHWARAN V	P
		5	20201PET0010	PRADEEP KUMAR RATHOD	P
		6	20201PET0011	A M RIZWAN	P
		7	20201PET0012	MOHAMMED SHAZAN	P
		8	20201PET0014	ZAHEED AHAMED	P
		9	20201PET0017	BHOOMIKA SATISH	P
		10	20201PET0018	NUTHAN M S	P
		11	20201PET0021	REGALLA JANARDHAN REDDY	P
		12	20201PET0022	MOHAMMED SHADIM D K	P
		13	20201PET0029	ALUVALA PAVAN KUMAR GOUD	P
		14	20201PET0034	KOMMINENI HEMANTH	P

Signature of Instructor In charge
Dr. Abhinav Kumar
Assistant Professor
Department of Petroleum Engineering

Dr. Suman Paul
Professor and Head
Department of Petroleum Engineering

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DEPARTMENT OF PETROLEUM ENGINEERING

Ref. No.: PU/SOE/PET/SD/OGWT/2022-23/CIR/01 Date: 16/05/2023

Circular

Academic Year: 2022 – 2023 **Course:** PET2019 **Semester:** 6th

Dear students of 6PET-1,

It is to inform you all that a "problem solving / numerical solving" activity for the course **PET2019 Oil and Gas Well Test Analysis** is schedule on 29/05/2023, from 3:10 PM to 4:00 PM (OFFLINE MODE). It is mandatory for all the student to remain present during the activity session and take part in numerical solving.

Dr. Abhinav Kumar
Instructor In-charge

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REPORT ON PROBLEM SOLVING

Circular Date and No.	Dtd: 16/05/2023 PU/SOE/PET/SD/OGWT/2022-23/CIR/01	**Date of Event**	29.05.2023
Type of learning	Skill development	**Event Type:**	Problem Solving
Mode of Event:	Offline	**No. of Participant(s):**	27
Course Code/Course Name	PET2019 Oil and Gas Well Test Analysis		
Department	Department of Petroleum Engineering		
Instructor In charge	Dr. Abhinav Kumar Assistant Professor, Department of Petroleum Engineering		

Event objective	The event was conducted to test the knowledge of students on the topic related to the application of principle of superposition in petroleum industry with a primary objective of improving the problem-solving skills of students.
Topic discussed	Principle of Superposition
Outcome of the event	i. Improvement in problem solving skill. ii. Improvement in identifying problem statement.
Assessment	i. Type of Assessment: Problem Solving ii. Task Assigned: Figure shows the rate history of a well that is producing under transient flow condition for 15 hours. Given the following data: pi = 5000 psi; h = 20'; B = 1.1 bbl/STB; φ= 15%; μ= 2.5 cp; rw = 0.3'; ct = 20 X 10-6 psi-1; s = 0; k = 40 md. Calculate the sand face pressure after 15 hours.

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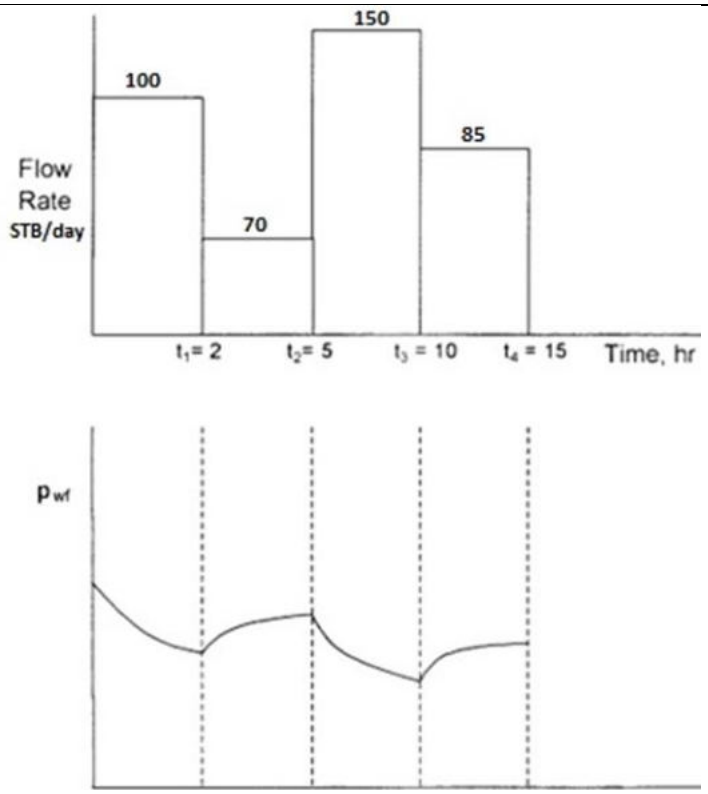

Figure: Production and pressure history of a well

iii. Sample answers by students:

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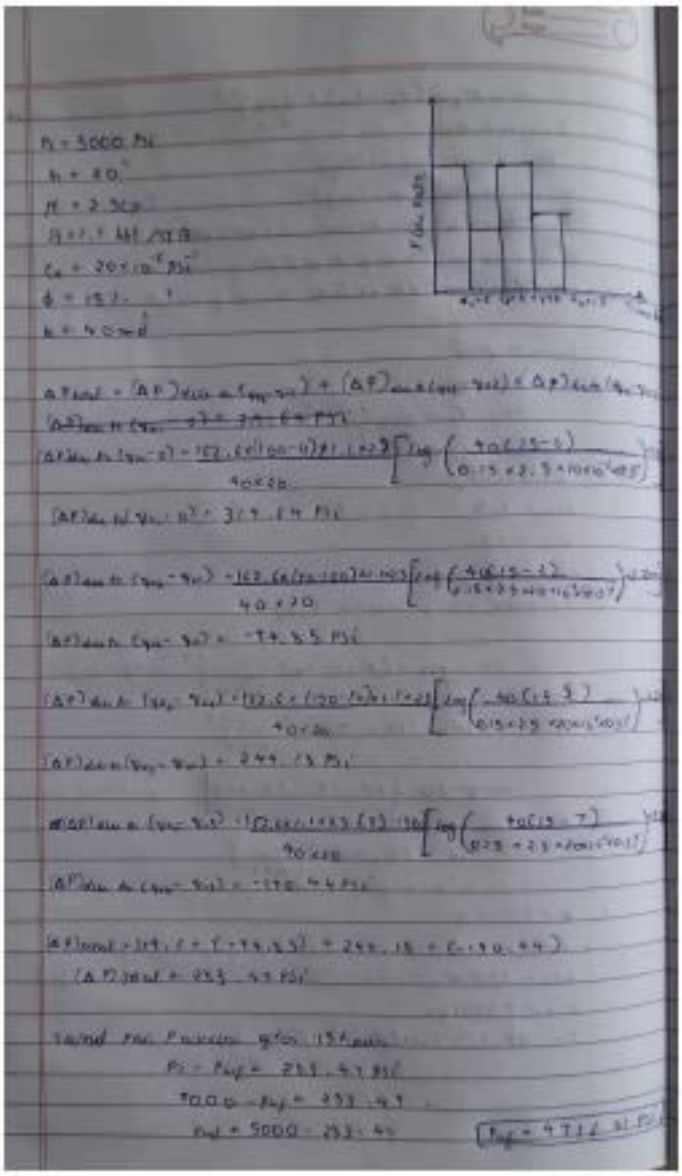

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Event photo

Attendance sheet

Sl. No.	ID No.	Student Name	Attendance
1	20201PET0001	Sohael K S	P
2	20201PET0004	Rachan Balakrishna Shetty	P
3	20201PET0006	Praveen B	P
4	20201PET0008	Nallabhotula Dushyanth	P
5	20201PET0009	Kotishwaran V	P
6	20201PET0010	Pradeep Kumar Rathod	P
7	20201PET0011	A M Rizwan	P
8	20201PET0012	Mohammed Shazan	P
9	20201PET0014	Zaheed Ahmed	P
10	20201PET0015	Mujtba Aamir Ahmed	P
11	20201PET0016	Siddharth Murali	P

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		12	20201PET0017	Bhoomika Satish	P
		13	20201PET0018	Nuthan M S	P
		14	20201PET0019	Pranav A	P
		15	20201PET0021	R Janardhan Reddy	P
		16	20201PET0022	Mohammed Shadim D K	P
		17	20201PET0023	Prathivraj S	P
		18	20201PET0026	Ajmal Akbar Babu	P
		19	20201PET0029	Pavan Goud	P
		20	20201PET0030	Aqib Ahmed Sharieef	P
		21	20201PET0031	Bandla Hareesh	P
		22	20201PET0033	Shekar	P
		23	20201PET0034	Kommineni Hemanth	P
		24	20201PET9001	Mohammed Shahid	P
		25	20191PET0009	C S Nishant	P
		26	20191PET0011	Fayaz Pasha	P
		27	20211LPE0001	Muhammed Swalih V P	P

Signature of Instructor In charge
Dr. Abhinav Kumar
Assistant Professor
Department of Petroleum Engineering

Dr. Suman Paul
Professor and Head
Department of Petroleum Engineering

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Dr.

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BANGALORE

REPORT ON PROBLEM SOLVING

Circular Date and No.	Dtd:02/05/2022 PU/SOE/PET/EB/ CST/2021-22/CIR/01	**Date of Submission**	09/05/202
Type of learning	Entrepreneurial Skills	**Event Type:**	Problem Solving
Mode of Event:	Offline	**No. of Participant(s):**	13
Course Code/Course Name	PET2027 Corrosion Science Technology		
Department	Department of Petroleum Engineering		
Instructor In charge	Dr. Rohit Sharma Assistant Professor, Department of Petroleum Engineering		

Event objective	The event was conducted to test the knowledge of students on the topic related to the Corrosion in petroleum industry with a primary objective of improving the problem-solving skills of students.
Topic discussed	Corrosion Characteristics and its remedial methods
Outcome of the event	i. Improvement in problem solving skill. ii. Improvement in identifying problem statement.
Assessment	i. Type of Assessment: Problem Solving ii. Task Assigned: Prepare an assignment on Corrosion characteristics of Petroleum industry: case study iii. Sample answers by students:

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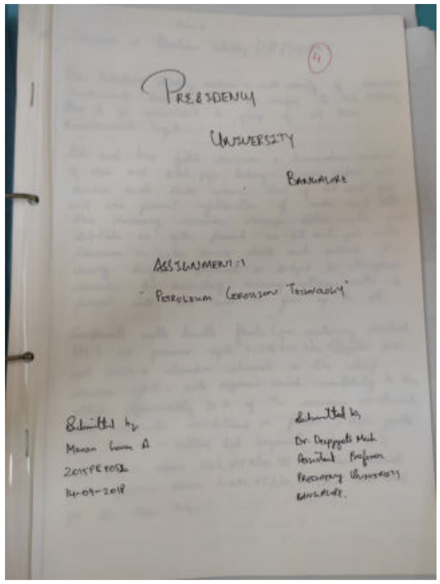


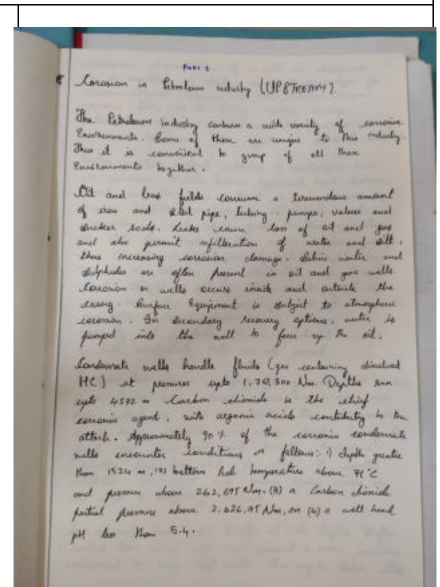
Presidency University Bangalore

Assignment:1

"Petroleum Corrosion Technology"

Submitted by, Manan Kumar A, 2015PE1005?, 14-09-2018

Submitted to, Dr. Deepyoti Mech, Assistant Professor, Presidency University, Bangalore.



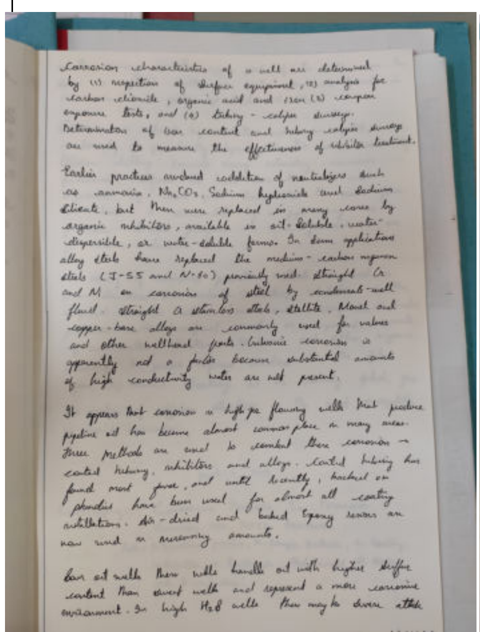
Part 1

Corrosion in Petroleum industry (UPSTREAM)

The Petroleum industry contains a wide variety of corrosive environments. Some of them are unique to this industry. Thus it is convenient to group of all these environments together.

Oil and Gas fields consume a tremendous amount of iron and steel pipe, tubing, pumps, valves and sucker rods. Leaks cause loss of oil and gas and also permit infiltration of water and silt, thus increasing corrosion damage. Saline water and sulphides are often present in oil and gas wells. Corrosion in wells occurs inside and outside the casing. Surface Equipment is subject to atmospheric corrosion. In secondary recovery options, water is pumped into the well to force up the oil.

Condensate wells handle fluids (gas containing dissolved HC) at pressures upto 1,70,300 kPa. Depths run upto 4572 m. Carbon dioxide is the chief corrosive agent, with organic acids contributing to the attack. Approximately 70% of the corrosive condensate wells encounter conditions as follows: 1) depth greater than 1524 m, (2) bottom hole temperature above 71°C and pressure above 262,695 kPa, (3) a carbon dioxide partial pressure above 2,626.95 kPa, or (4) a well head pH less than 5.4.

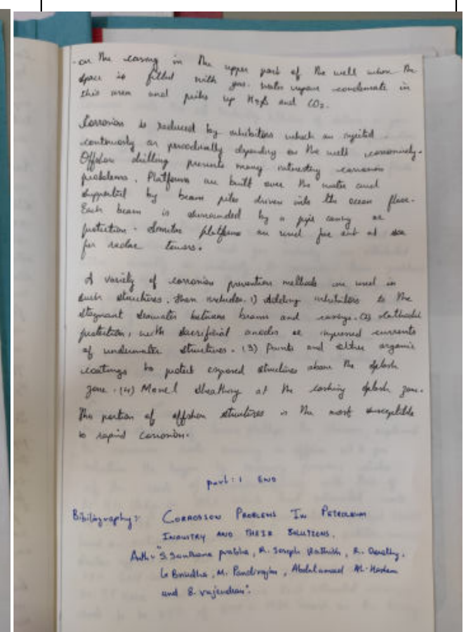


Corrosion characteristics of a well are determined by (1) inspection of surface equipment, (2) analysis for carbon dioxide, organic acid and iron (3) coupon exposure tests, and (4) tubing-caliper surveys. Determination of iron content and tubing caliper surveys are used to measure the effectiveness of inhibitor treatment.

Earlier practices involved addition of neutralizers such as ammonia, Na_2CO_3, Sodium hydroxide and Sodium silicate, but these were replaced in many cases by organic inhibitors, available in oil-soluble, water-dispersible, or water-soluble forms. In some applications alloy steels have replaced the medium-carbon regular steels (J-55 and N-80) previously used. Straight Cr and Ni are corrosion of steel by condensate-well fluid. Straight Cr stainless steels, Stellite, Monel and copper-base alloys are commonly used for valves and other wellhead parts. Galvanic corrosion is apparently not a factor because substantial amounts of high conductivity water are not present.

It appears that corrosion in high pressure flowing wells that produce pipeline oil has become almost commonplace in many areas. Three methods are used to combat this corrosion — coated tubing, inhibitors and alloys. Coated tubing has found most favor, and until recently, baked on phenolics have been used for almost all coating installations. Air-dried and baked Epoxy resins are now used in increasing amounts.

Gas oil wells than wells handle oil with higher sulfur content than sweet wells and represent a more corrosive environment. In high H_2S wells there may be severe attack



on the casing in the upper part of the well where the space is filled with gas. Water vapour condensate in this area and picks up H_2S and CO_2.

Corrosion is reduced by inhibitors which are injected continuously or periodically depending on the well economically. Offshore drilling presents many interesting corrosion problems. Platforms are built over the water and supported by beam piles driven into the ocean floor. Each beam is surrounded by a pipe casing as protection. Similar platforms are used for oil at sea for radar towers.

A variety of corrosion prevention methods are used in such structures. These include: 1) adding inhibitors to the stagnant seawater between beams and casings. (2) cathodic protection, with sacrificial anodes or impressed currents of underwater structures. (3) Paints and other organic coatings to protect exposed structures above the splash zone. (4) Monel sheathing at the tidal splash zone. The portion of offshore structures in the most susceptible to rapid corrosion.

part 1 end

Bibliography: Corrosion Problems In Petroleum Industry and their Solutions, Authors: S. Sundharam prabha, R. Joseph Rathish, R. Dorothy, G. Brindha, M. Pandiarajan, Abdulameed Al-Hashem and S. Rajendran.

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Registrar

Attendance sheet	

Sl. No.	Student ID No	Name
1	20201PET0004	RACHAN BALAKRISHNA SHETTY
2	20201PET0008	NALLABHOTULA DUSHYANTH
3	20201PET0010	PRADEEP KUMAR RATHOD
4	20201PET0014	ZAHEED AHMED
5	20201PET0015	MUJTBA AAMIR AHMED
6	20201PET0016	SIDHARTH MURALI
7	20201PET0017	BHOOMIKA SATISH
8	20201PET0019	PRANAV. A
9	20201PET0022	MOHAMMED SHADIM D K
10	20201PET0023	PRATHIVRAJ S
11	20201PET0026	AJMAL AKBAR BABU
12	20201PET0031	BANDLA HAREESH
13	20201PET0034	KOMMINENI HEMANTH

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PRESIDENCY UNIVERSITY Registrar BANGALORE

Dr. Rohit Sharma

Instructor In-charge

Dr. Suman Paul
Professor and Head
Department of Petroleum Engineering

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GAIN MORE KNOWLEDGE
REACH GREATER HEIGHTS

Presidency University, Bengaluru
Itgalpur, Rajanakunte, Yelahanka, Bengaluru – 560064

DEPARTMENT OF PETROLEUM ENGINEERING

Ref. No.: PU/SOE/PET/EB/OHS/2021-22/CIR/02 Date: 09/06/2022

Circular

Academic Year: 2021 – 2022 **Course:** PET 2030 **Semester:** 4th

Dear students of 4PET-1,

It is to inform you all that a "problem solving / assignment" for the course **PET 2030 Occupational Health Safety** is scheduled 16/06/2022. The assignment (numerical) will be based on the topic discussed in the previous lectures about the risk analysis.

It is mandatory for all the student to attend in the assignment without fail.

Mr. Ankur Neog
Instructor In-charge

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REPORT ON PROBLEM SOLVING

Circular Date and No.	Dtd: 09/06/2022 PU/SOE/PET/EB/ OHS/2021-22/CIR/02	**Date of Event**	16/06/2022
Type of learning	Employability Skills	**Event Type:**	Problem Solving
Mode of Event:	Offline	**No. of Participant(s):**	20
Course Code/Course Name	PET2030 Occupational Health Safety		
Department	Department of Petroleum Engineering		
Instructor In charge	Mr. Ankur Neog Assistant Professor, Department of Petroleum Engineering		

Event objective	The event was conducted to test the knowledge of students on the topic related to the Risk Analysis with a primary objective of improving the problem-solving skills of students.
Topic discussed	Numerical on the Risk Analysis
Outcome of the event	i. Improvement in problem solving skill. ii. Improvement in identifying problem statement.
Assessment	i. Type of Assessment: Problem Solving (Numerical) ii. Task Assigned: Quiz on the Assesment of the risk iii. Sample answers by students:

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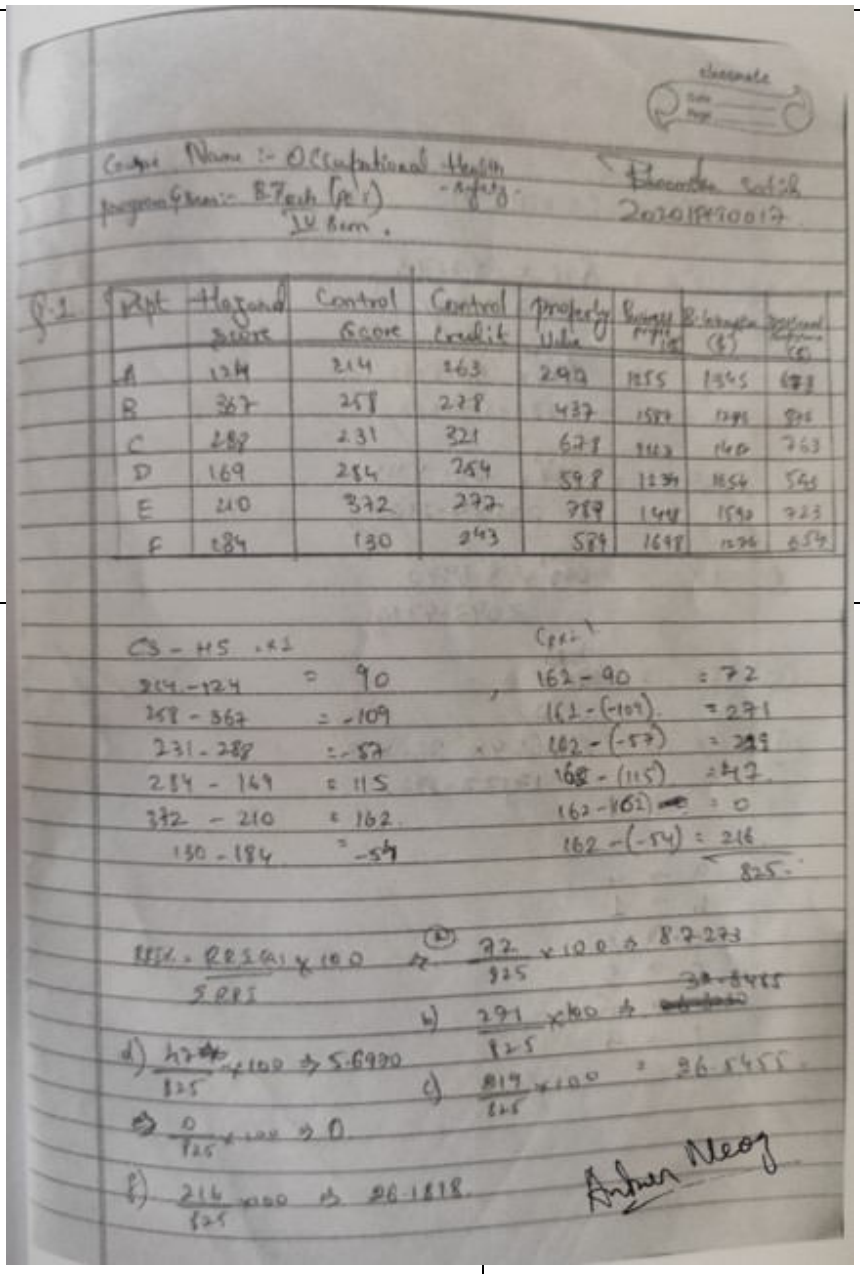

Course Name :- Occupational Health & Safety
Programme :- B.Tech (P&E)
IV Sem.
Bhavesh Sahib
20201PP0017

Dept	Hazard Score	Control Score	Control Credit	Property Value	Risk Priority	Risk Index (%)	Normalized Risk Index (%)
A	124	214	263	290	1855	1345	673
B	367	258	278	437	1589	1095	548
C	288	231	321	678	1163	760	763
D	169	284	264	598	1234	1154	545
E	210	372	272	789	1448	1596	723
F	184	130	243	589	1698	1076	654

CS - HS = x1

214 - 124 = 90
258 - 367 = -109
231 - 288 = -57
284 - 169 = 115
372 - 210 = 162
130 - 184 = -54

x1

162 - 90 = 72
162 - (-109) = 271
162 - (-57) = 219
162 - (115) = 47
162 - 162 = 0
162 - (-54) = 216
825

RRI% = RRI(a) x 100 / ΣRRI

a) 72/825 x100 ≈ 8.7273
b) 271/825 x100 ≈ 32.8485
c) 219/825 x100 = 26.5455
d) 47/825 x100 ≈ 5.6970
e) 0/825 x100 ≈ 0
f) 216/825 x100 ≈ 26.1818

Arthur Neog

REGISTRAR

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Event photo

Attendance sheet

Sl No	Roll no.	Name	Attendance
1	20201PET0001	SOHAEL KS	P
2	20201PET0004	SHETTY RACHAN BALAKRISHNA	P
3	20201PET0008	NALLABHOTULA DUSHYANTH	P
4	20201PET0009	KOTISHWARAN V	P
5	20201PET0010	PRADEEP KUMAR RATHOD	P
6	20201PET0011	A M RIZWAN	P
7	20201PET0015	MUJTBA AAMIR AHMED	P
8	20201PET0016	SIDHARTH MURALI	P
9	20201PET0017	BHOOMIKA SATISH	P
10	20201PET0018	NUTHAN M S	P
11	20201PET0019	PRANAV A.	P
12	20201PET0021	R JANARDHAN REDDY	P
13	20201PET0026	AJMAL AKBAR BABU	P
14	20201PET0029	PAVAN GOUD	P
15	20201PET0030	AQIB AHMED SHARIEEF	P
16	20201PET0031	BANDLA HAREESH	P
17	20201PET0033	SHEKAR	P
18	20201PET0034	KOMMINENI HEMANTH	P
19	20201PET9001	MOHAMMED SHAHID	P
20	20201PET9002	NITIN	P

Mr. Ankur Neog
Instructor In-charge

Dr. Suman Paul
Professor and Head
Department of Petroleum Engineering

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PRESIDENCY UNIVERSITY Registrar BANGALORE

DEPARTMENT OF PETROLEUM ENGINEERING

Ref. No.: PU/SOE/PET/EB/MHWT/2022-23/CIR/01 Date: 17/05/2023

Circular

Academic Year: 2022 – 2023 **Course:** PET3005 **Semester:** 6th

Dear students of 6PET-1,

It is to inform you all that a "problem solving" activity for the course **PET3005 Multilateral and Horizontal Well Technology** is scheduled on 22/05/2023.

It is mandatory for all the students to remain present during the activity session and take part in numerical solving.

Mr. Gaurav Kundu
Instructor In-charge

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REPORT ON PROBLEM SOLVING

Circular Date and No.	Date: 17/05/2023 PU/SOE/PET/EB/MHWT/2022-23/CIR/01	**Date of Event**	22.05.2023
Type of learning	Skill development	**Event Type:**	Problem Solving
Mode of Event:	Offline	**No. of Participant(s):**	13
Course Code/Course Name	PET3005 Multilateral and Horizontal Well Technology		
Department	Department of Petroleum Engineering		
Instructor In charge	Dr. Gaurav Kundu Assistant Professor, Department of Petroleum Engineering		

Event objective	The event was conducted to test the knowledge of students on the topic related to the Comparison of horizontal and vertical well test with theoretical approach with a primary objective of improving the problem-solving skills of students.
Topic discussed	Comparison of horizontal and vertical well test with theoretical approach.
Outcome of the event	i. Improvement in problem solving skill. ii. Improvement in identifying problem statement.
Assessment	i. Type of Assessment: Problem Solving ii. Task Assigned: Comparison of horizontal and vertical well test with theoretical approach. iii. Sample answers by students:

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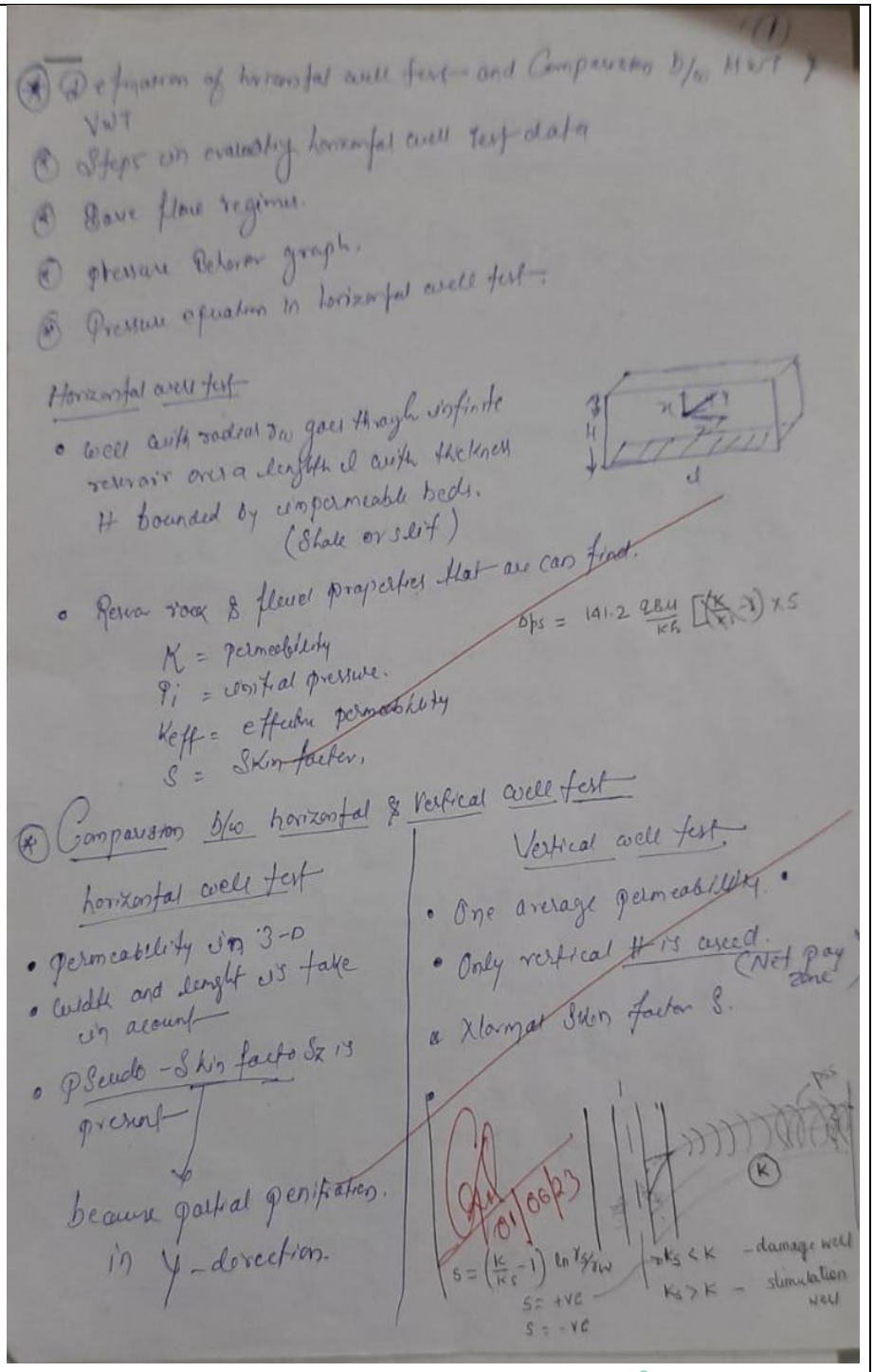
(1)
Horizontal well test
Vertical well test
Net Pay zone
damage well
stimulation well

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Event photo

Attendance sheet

ID No.	Student Name	22-05-2023	01-06-2023
20201PET0001	SOHAEL K S	A	P
20201PET0006	PRAVEEN B	P	P
20201PET0015	MUJTBA AAMIR AHMED	A	P
20201PET0016	SIDDHARTH MURALI	P	P
20201PET0019	PRANAV A	P	P
20201PET0023	PRATHIVRAJ S	P	P
20201PET0026	AJMAL AKBAR BABU	P	P
20201PET0030	AQIB AHMED SHARIEEF	A	P
20201PET0031	BANDLA HAREESH	P	P
20201PET0033	SHEKAR	P	P
20201PET9001	MOHAMMED SHAHID	A	P
20211LPE0001	MUHAMMED SWALIH V P	P	P
20191PET0009	C S NISHANT	P	P

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Signature of Instructor In charge
Mr. Gaurav Kundu
Assistant Professor
Department of Petroleum Engineering

Dr. Suman Paul
Professor and Head
Department of Petroleum Engineering

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BANGALORE

DEPARTMENT OF PETROLEUM ENGINEERING

Ref. No.: PU/SOE/PET/SD/APRE/2022-23/CIR/01 Date: 24/04/2023

Circular

Academic Year: 2022 – 2023 **Course:** PET3006 **Semester:** 6th

Dear students of 6PET-1,

It is to inform you all that a "problem solving / numerical solving" activity for the course **PET3006 Advanced Petroleum Reservoir Engineering** is schedule on 02/05/2023, from 1:20 PM to 2:10 PM (OFFLINE MODE).

It is mandatory for all the student to remain present during the activity session and take part in numerical solving.

Dr. Deepjyoti Mech

Instructor In-charge

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REPORT ON PROBLEM SOLVING

Circular Date and No.	Dtd: 24/04/2023 PU/SOE/PET/SD/APRE/2022-23/CIR/01	**Date of Event**	02.05.2023
Type of learning	Skill development	**Event Type:**	Problem Solving
Mode of Event:	Offline	**No. of Participant(s):**	27
Course Code/Course Name	PET3006 Advanced Petroleum Reservoir Engineering		
Department	Department of Petroleum Engineering		
Instructor In charge	Dr. Deepjyoti Mech Assistant Professor, Department of Petroleum Engineering		

Event objective	The event was conducted to test the knowledge of students on the topic related to the application of material balance equation in petroleum industry with a primary objective of improving the problem solving skills of students.
Topic discussed	Water Influx
Outcome of the event	i. Improvement in problem solving skill. ii. Improvement in identifying problem statement.
Assessment	i. Type of Assessment: Problem Solving ii. Task Assigned: A combination-drive reservoir contains 10 MMSTB of oil initially in place. The ratio of the original gas-cap volume to the original oil volume, i.e., m, is estimated as 0.25. The initial reservoir pressure is 3000 psia at 150°F. The reservoir produced 1 MMSTB of oil, 1100 MMscf of 0.8 specific gravity gas, and 50,000 STB of water by the time the reservoir pressure dropped to 2800 psi. The following PVT is available:

	3000 psi	2800 psi
Bo, bbl/STB	1.58	1.48
Rs, Scf/STB	1040	850
Bg, bbl/scf	0.00080	0.00092
Bt, bbl/STB	1.58	1.655
Bw, bbl/STB	1.000	1.000

The following data is also available:
Swi = 0.20, cw = 1.5 X 10-6 psi-1, cf = 1 X 10-6 psi-1

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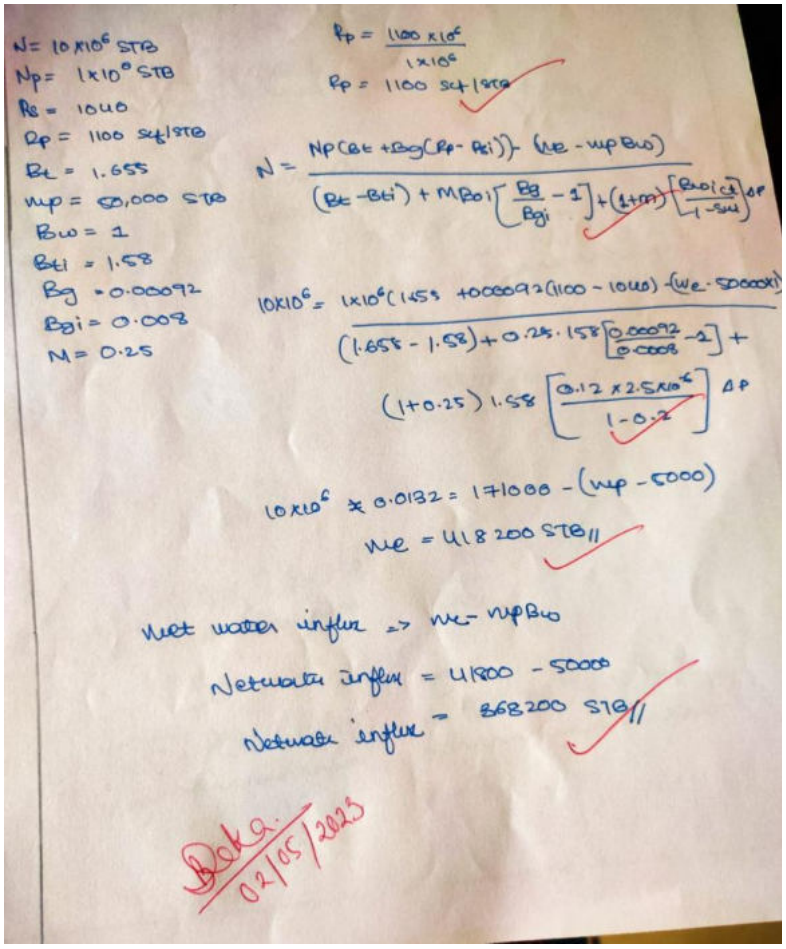
	Interpret the following: a) Cumulative water influx b) Net water influx iii. Sample answers by students:



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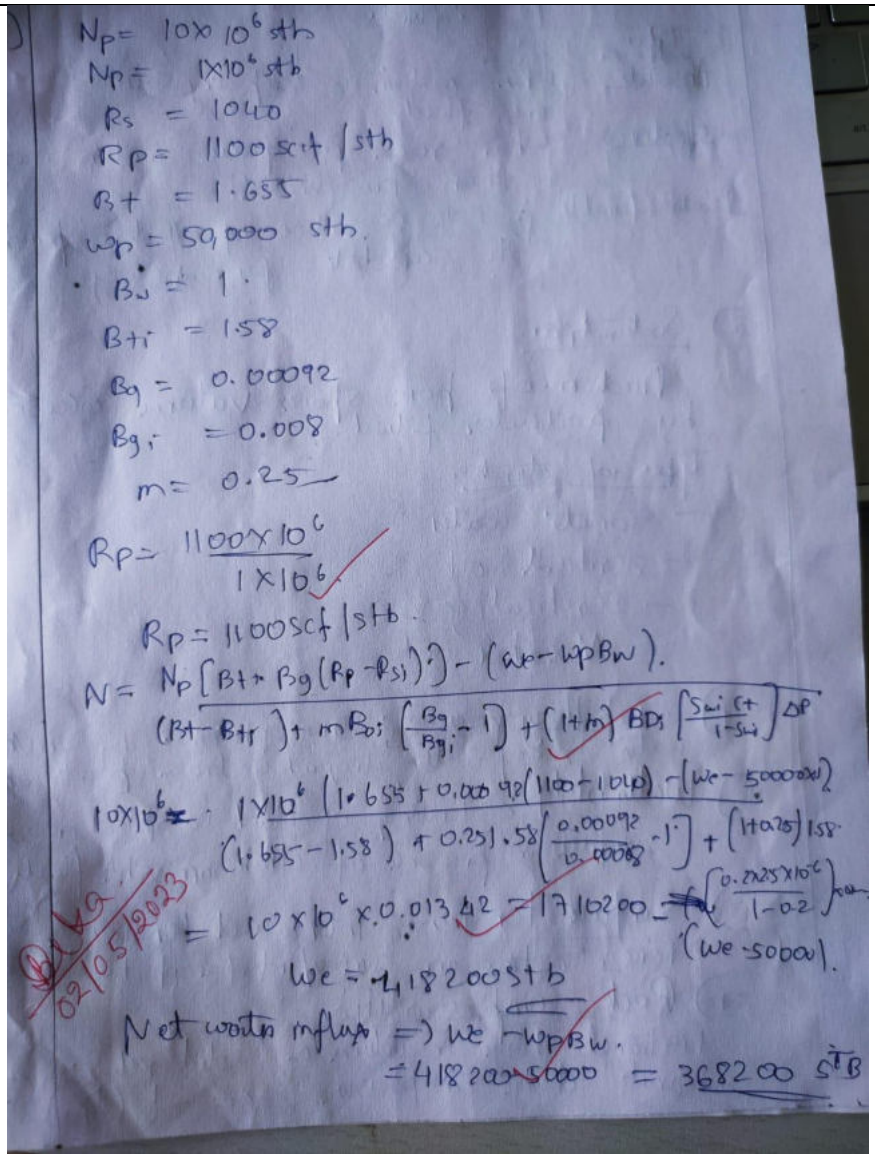

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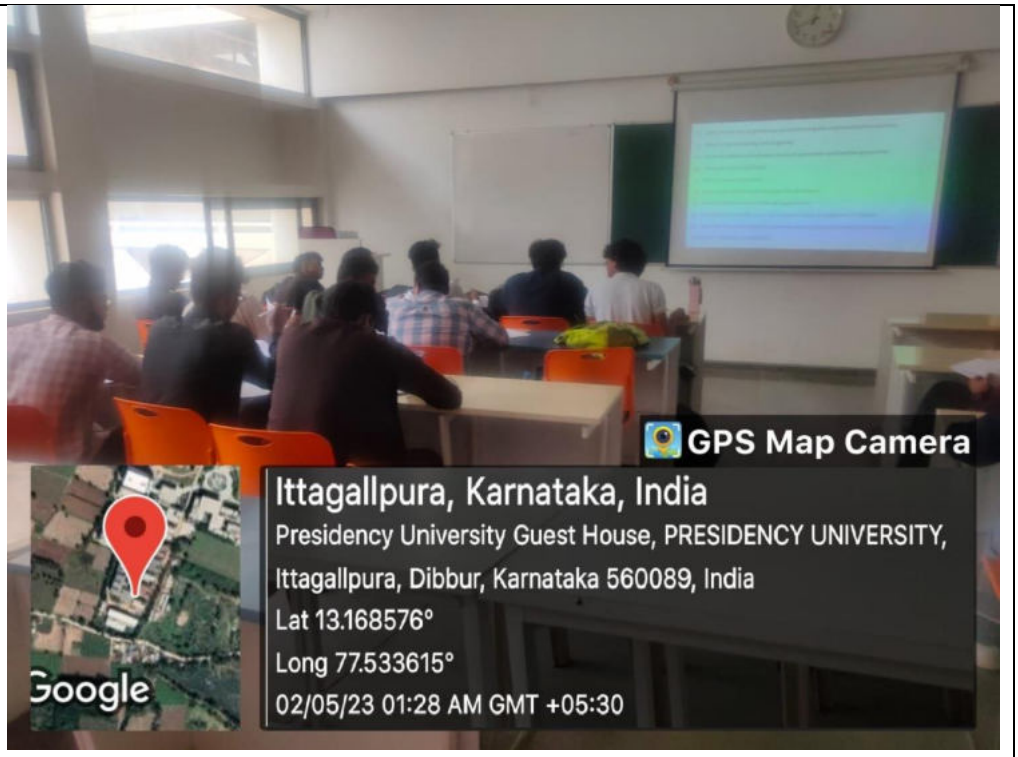
Event photo



Attendance sheet

Sl. No.	ID No.	Student Name	Attendance
1	20201PET0001	Sohael K S	P
2	20201PET0004	Rachan Balakrishna Shetty	P
3	20201PET0006	Praveen B	P
4	20201PET0008	Nallabhotula Dushyanth	P
5	20201PET0009	Kotishwaran V	P
6	20201PET0010	Pradeep Kumar Rathod	P
7	20201PET0011	A M Rizwan	P
8	20201PET0012	Mohammed Shazan	P
9	20201PET0014	Zaheed Ahmed	P
10	20201PET0015	Mujtba Aamir Ahmed	P
11	20201PET0016	Siddharth Murali	P

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		12	20201PET0017	Bhoomika Satish	P
		13	20201PET0018	Nuthan M S	P
		14	20201PET0019	Pranav A	P
		15	20201PET0021	R Janardhan Reddy	P
		16	20201PET0022	Mohammed Shadim D K	P
		17	20201PET0023	Prathivraj S	P
		18	20201PET0026	Ajmal Akbar Babu	P
		19	20201PET0029	Pavan Goud	P
		20	20201PET0030	Aqib Ahmed Sharieef	P
		21	20201PET0031	Bandla Hareesh	P
		22	20201PET0033	Shekar	P
		23	20201PET0034	Kommineni Hemanth	P
		24	20201PET9001	Mohammed Shahid	P
		25	20191PET0009	C S Nishant	P
		26	20191PET0011	Fayaz Pasha	P
		27	20211LPE0001	Muhammed Swalih V P	P

Signature of Instructor In charge
Dr. Deepjyoti Mech
Assistant Professor
Department of Petroleum Engineering

Dr. Suman Paul
Professor and Head
Department of Petroleum Engineering

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Presidency University, Bengaluru
Itgalpur, Rajanakunte, Yelahanka, Bengaluru – 560064

DEPARTMENT OF PETROLEUM ENGINEERING

Ref. No.: PU/SOE/PET/EB/OHS/2021-22/CIR/02 Date: 09/06/2022

Circular

Academic Year: 2021 – 2022 **Course:** PET 2030 **Semester:** 4th

Dear students of 4PET-1,

It is to inform you all that a "problem solving / assignment" for the course **PET 2030 Occupational Health Safety** is scheduled 16/06/2022. The assignment (numerical) will be based on the topic discussed in the previous lectures about the risk analysis.

It is mandatory for all the student to attend in the assignment without fail.

Mr. Ankur Neog
Instructor In-charge

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REPORT ON PROBLEM SOLVING

Circular Date and No.	Dtd: 09/06/2022 PU/SOE/PET/EB/ OHS/2021-22/CIR/02	**Date of Event**	16/06/2022
Type of learning	Employability Skills	**Event Type:**	Problem Solving
Mode of Event:	Offline	**No. of Participant(s):**	20
Course Code/Course Name	PET2030 Occupational Health Safety		
Department	Department of Petroleum Engineering		
Instructor In charge	Mr. Ankur Neog Assistant Professor, Department of Petroleum Engineering		

Event objective	The event was conducted to test the knowledge of students on the topic related to the Risk Analysis with a primary objective of improving the problem-solving skills of students.
Topic discussed	Numerical on the Risk Analysis
Outcome of the event	i. Improvement in problem solving skill. ii. Improvement in identifying problem statement.
Assessment	i. Type of Assessment: Problem Solving (Numerical) ii. Task Assigned: Quiz on the Assesment of the risk iii. Sample answers by students:

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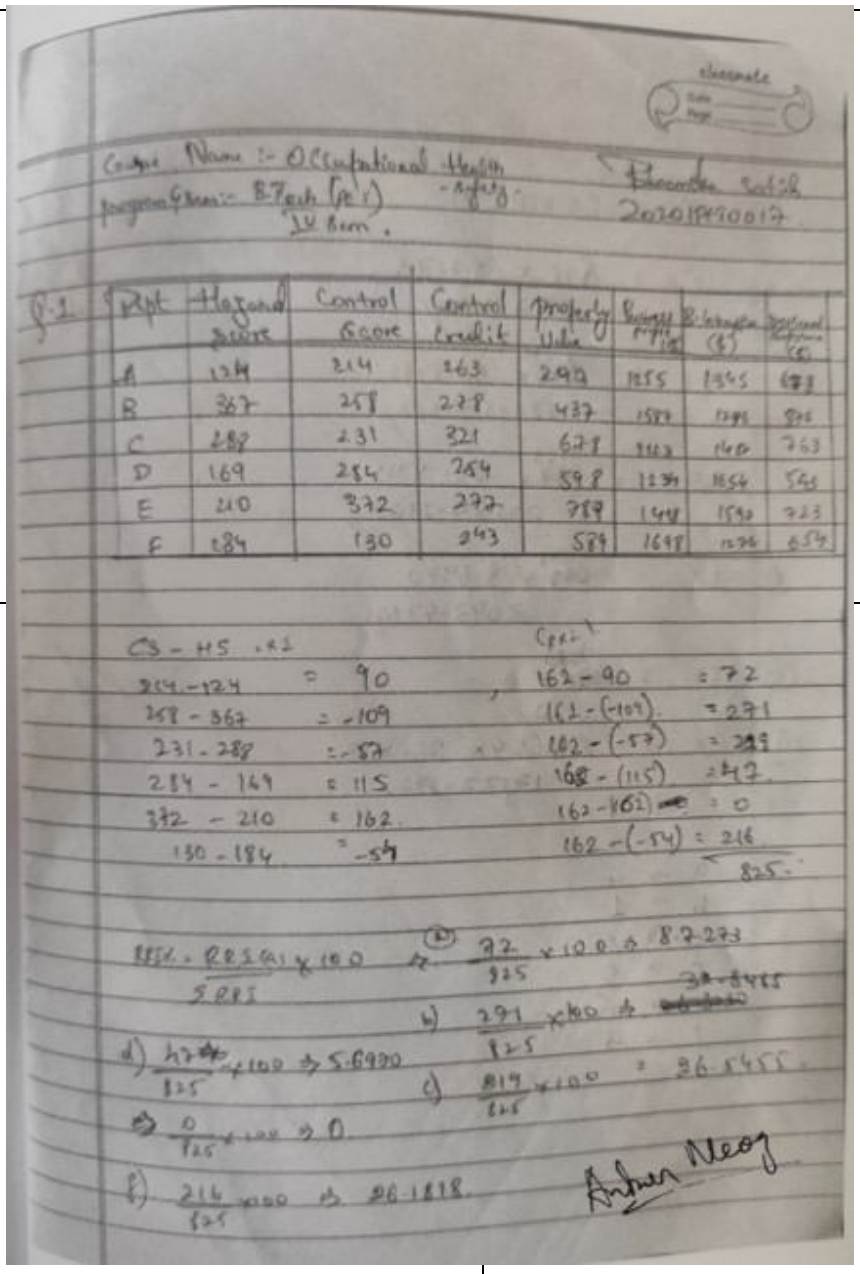

Course Name :- Occupational Health & Safety
Programme :- B.Tech (P&E)
IV Sem.
Bhavesh Sahib
20201PP0017

Dept	Hazard Score	Control Score	Control Credit	Property Value	Risk Priority	Risk Index (%)	Normalized Risk Index (%)
A	124	214	263	290	1855	1345	673
B	367	258	278	437	1589	1095	548
C	288	231	321	678	1163	760	763
D	169	284	264	598	1234	1154	545
E	210	372	272	789	1448	1596	723
F	184	130	243	589	1698	1076	654

CS - HS = x1

214 - 124 = 90
258 - 367 = -109
231 - 288 = -57
284 - 169 = 115
372 - 210 = 162
130 - 184 = -54

x1

162 - 90 = 72
162 - (-109) = 271
162 - (-57) = 219
162 - (115) = 47
162 - 162 = 0
162 - (-54) = 216
825

RRI% = RRI(a) x 100 / ΣRRI

a) 72/825 x100 ≈ 8.7273
b) 271/825 x100 ≈ 32.8485
c) 219/825 x100 = 26.5455
d) 47/825 x100 ≈ 5.6970
e) 0/825 x100 ≈ 0
f) 216/825 x100 ≈ 26.1818

Arthur Neog

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Event photo

Attendance sheet

Sl No	Roll no.	Name	Attendance
1	20201PET0001	SOHAEL KS	P
2	20201PET0004	SHETTY RACHAN BALAKRISHNA	P
3	20201PET0008	NALLABHOTULA DUSHYANTH	P
4	20201PET0009	KOTISHWARAN V	P
5	20201PET0010	PRADEEP KUMAR RATHOD	P
6	20201PET0011	A M RIZWAN	P
7	20201PET0015	MUJTBA AAMIR AHMED	P
8	20201PET0016	SIDHARTH MURALI	P
9	20201PET0017	BHOOMIKA SATISH	P
10	20201PET0018	NUTHAN M S	P
11	20201PET0019	PRANAV A.	P
12	20201PET0021	R JANARDHAN REDDY	P
13	20201PET0026	AJMAL AKBAR BABU	P
14	20201PET0029	PAVAN GOUD	P
15	20201PET0030	AQIB AHMED SHARIEEF	P
16	20201PET0031	BANDLA HAREESH	P
17	20201PET0033	SHEKAR	P
18	20201PET0034	KOMMINENI HEMANTH	P
19	20201PET9001	MOHAMMED SHAHID	P
20	20201PET9002	NITIN	P

Mr. Ankur Neog
Instructor In-charge

Dr. Suman Paul
Professor and Head
Department of Petroleum Engineering

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Department of Petroleum Engineering
Presidency University, Bengaluru
Itgalpur, Rajanakunte, Yelahanka, Bengaluru – 560064

Ref. No.: PU/SOE/PET/PS/2022-23/7PET1/CIR/01 Date: 10-12-2022

CIRCULAR

It is to inform all the students that they need to solve the following problem and upload in One drive on or before 16-12-2022.

Problem 1: The head and efficiency versus capacity data for a centrifugal pump with a 10 in. impeller is as shown below.

Q, gal/min	0	800	1600	2400	3000
H, ft	3185	3100	2900	2350	1800
E, %	0.0	55.7	78.0	79.3	72.0

The pump is driven by a constant-speed electric motor at a speed of 3560 RPM.
(a) Determine the performance of this pump with an 11 in. impeller, using Affinity Laws.
(b) If the pump drive were changed to a variable frequency drive (VFD) motor with a speed range of 3000 to 4000 RPM, calculate the new H-Q curve for the maximum speed of 4000 RPM with the original 10 in. impeller.

Instructor
Mr. Utkarsh Lall
Assistant Professor
Department of Petroleum Engineering

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REPORT ON PROBLEM SOLVING

Circular Date and No.	Dtd: 10-12-2022 PU/SOE/PET/PS/2022-23/7PET1/CIR/01	**Date of Event**	16-12-2022
Type of learning	Problem Solving	**Event Type:**	Course based problem
Mode of Event:	Offline	**No. of Participant(s):**	16
Course Code/Course Name	PET2003 Pipeline Engineering		
Department	Department of Petroleum Engineering		
Instructor	Mr Utkarsh Lall Assistant Professor, Department of Petroleum Engineering		

Event objective	1. Develop numerical ability 2. Apply knowledge on Fundamentals of Drilling to solve problems
Name of the topic	1. To analyze the H-Q Curve in Pump Design.
Outcome of the event	i. Solve Centrifugal Pump Design Problem.
Assessment	i. Type of Assessment: Solving advanced Numerical ii. Task Assigned: Solve one problem iii. Sample Report by students
Sample student report	Attached in the ANNEXURE

Attendance sheet

Sl. No.	ID No.	Student Name	Submission status
1	20191PET 0001	AHIL SHA MC	Submitted
2	20191PET 0002	AKASH S	Submitted
3	20191PET 0005	ASWIN K S	Submitted
4	20191PET 0012	FEROZ AHMED KHUDAVAND	Submitted
5	20191PET 0013	FIROZA SHEIKH	Submitted

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	6	20191PET 0016	HARI GOVIND V	Not Submitted	
	7	20191PET 0019	KADIRI LALITHA	Submitted	
	8	20191PET 0021	KRITIKA	Submitted	
	9	20191PET 0027	MOHAMED SUHAIL	Submitted	
	10	20191PET 0033	MOHAMMED REEHAN AZHAR	Submitted	
	11	20191PET 0034	MOHAMMED TAHA NAJEEB BASHA	Submitted	
	12	20191PET 0035	MOHAMMED UZMAIR M	Submitted	
	13	20191PET 0052	SHAIKH ADNAN ZAKIRHUSAIN	Submitted	
	14	20191PET 0055	TANIYA K G	Submitted	
	15	20191PET 0067	SHAIK MUJEEB UR REHAMAN	Submitted	
	16	20191PET 0068	RIZWAN	Submitted	

Signature of Instructor
Mr. Utkarsh Lall
Assistant Professor
Department of Petroleum Engineering

Dr. Suman Paul
Professor and Head
Department of Petroleum Engineering

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Course Code/Course Name	PET 303 Pipeline Engineering
Event Type	Problem solving
Task	Course based exercise
Instructor	Mr Utkarsh Lall Assistant Professor, Department of Petroleum Engineering
Submission Date	16-12-2022
Name of the student	MOHAMMED UZMAIR M
ID number	20191PET0035

Problem statement

The head and efficiency versus capacity data for a centrifugal pump with a 10 in. impeller is as shown below.

Q, gal/min	0	800	1600	2400	3000
H, ft	3185	3100	2900	2350	1800
E, %	0.0	55.7	78.0	79.3	72.0

The pump is driven by a constant-speed electric motor at a speed of 3560 RPM.
(a) Determine the performance of this pump with an 11 in. impeller, using Affinity Laws.
(b) If the pump drive were changed to a variable frequency drive (VFD) motor with a speed range of 3000 to 4000 RPM, calculate the new H-Q curve for the maximum speed of 4000 RPM with the original 10 in. impeller.

Student solution

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Mohammed Uzmair M
Roll no → 20191PET0035

Problem Solving Assignment

Qus/ The head & efficiency curve versus capacity data for a centrifugal pump with a 10 in. impeller is as shown below.

Q, gal/min	0	800	1600	2400	3000
H, ft	7185	7100	2900	2350	1800
E, %	0.0	55.7	78.0	79.2	72

The pump is driven by a constant-speed electric motor at a speed of 3560 RPM.

a) Determine the performance of this pump with an 11 in. impeller, using Affinity laws.

b) If pump drive were changed to a variable frequency drive (VFD) motor with a speed range of 3000–4000 RPM, calculate the new H–Q curve for the maximum speed of 4000 RPM with the original 10 in impeller.

Soln/

a) Using Affinity laws for impeller diameter changes, the multiplying factor for flow rate = 11/10 = 1.1 for head $(1.1)^2 = 1.21$.

Therefore, we will generate a new set of Q & H values for the 11 in. impeller by multiplying the given Q values by 1.1 & H by 1.21

Q, gal/min	0	880	1760	2640	3200
H, ft	7854	7751	3509	2849	2178

b) Using affinity laws for speeds, the multiplying factor for flow rate is factor = 4000/3560 = 1.1236 & for Head is 1.2625

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	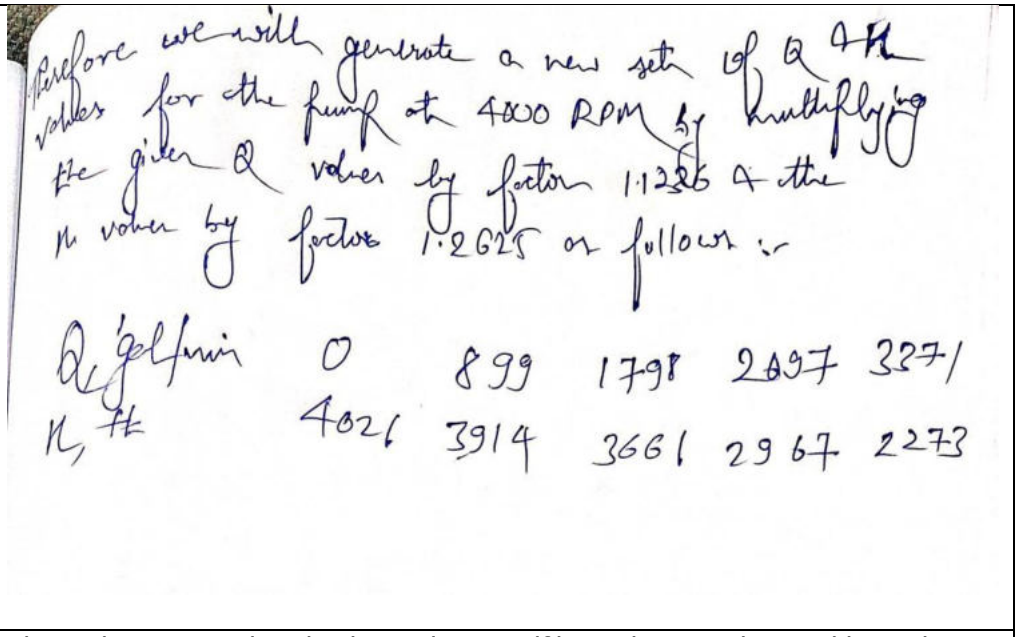 Therefore we will generate a new set of Q & H values for the pump at 4000 RPM by multiplying the given Q values by factor 1.1326 & the H values by factor 1.2625 as follows :- Q, gal/min 0 899 1798 2697 3371 H, ft 4021 3914 3661 2967 2273
Evaluation	The evaluation was done by the students itself by exchanging their problem solutions so that they can learn about the simple calculation errors that can take place while solving the problems.

Instructor
Mr. Utkarsh Lall
Assistant Professor
Department of Petroleum Engineering

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Department of Petroleum Engineering
Presidency University, Bengaluru
Itgalpur, Rajanakunte, Yelahanka, Bengaluru – 560064

Ref. No.: PU/SOE/PET/PS/2022-23/5PET1/CIR/01 Date: 25-11-2022

CIRCULAR

It is to inform all the students that they need to solve the following problem and upload in One drive on or before 01-12-2022.

Problem 1: A gas lift valve with dome pressure 400 psi and spring pressure 150 psi is being used as operating valve at 7500 ft depth. The fluid in the tubing, with density 7.49 ppg, is causing a pressure 120 psi at the valve depth. If the valve area and bellow area is .21 sq inch and 1.71 sq inch, then determine the following :
a) Opening and closing pressure for this valve,
b) Spread.

Instructor
Mr. Utkarsh Lall
Assistant Professor
Department of Petroleum Engineering

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REPORT ON PROBLEM SOLVING

Circular Date and No.	Dtd: 25-11-2022 PU/SOE/PET/PS/2022-23/5PET1/CIR/01	**Date of Event**	01-12-2022
Type of learning	Problem Solving	**Event Type:**	Course based problem
Mode of Event:	Offline	**No. of Participant(s):**	27
Course Code/Course Name	PET2006 Fundamentals of Oil and Gas Production Technology		
Department	Department of Petroleum Engineering		
Instructor	Mr Utkarsh Lall Assistant Professor, Department of Petroleum Engineering		

Event objective	1. Develop numerical ability 2. Apply knowledge on Fundamentals of Drilling to solve problems
Name of the topic	1. To analyze the opening and closing pressure of gas lift valve along with determination of spread.
Outcome of the event	i. Solve Artificial Lift Problem on Gas Lift Design
Assessment	i. Type of Assessment: Solving advanced Numerical ii. Task Assigned: Solve one problem iii. Sample Report by students
Sample student report	Attached in the ANNEXURE

Attendance sheet

Sl. No.	ID No.	Student Name	Submission status
1	20201PET 0001	SOHAEL K S	Submitted
2	20201PET 0004	SHETTY RACHAN BALAKRISHNA	Submitted
3	20201PET 0006	PRAVEEN B	Submitted
4	20201PET 0008	NALLABHOTULA DUSHYANTH	Submitted
5	20201PET 0009	KOTISHWARAN V	Submitted

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6	20201PET 0010	PRADEEP KUMAR RATHOD	Submitted
7	20201PET 0011	A M RIZWAN	Submitted
8	20201PET 0012	MOHAMMED SHAZAN	Submitted
9	20201PET 0014	ZAHEED AHMED	Submitted
10	20201PET 0015	MUJTBA AAMIR AHMED	Submitted
11	20201PET 0016	SIDHARTH MURALI	Submitted
12	20201PET 0017	BHOOMIKA SATISH	Submitted
13	20201PET 0018	NUTHAN M S	Submitted
14	20201PET 0019	PRANAV A.	Submitted
15	20201PET 0021	R JANARDHAN REDDY	Submitted
16	20201PET 0022	MOHAMMED SHADIM D K	Submitted
17	20201PET 0023	PRATHIVRAJ S	Submitted
18	20201PET 0026	AJMAL AKBAR BABU	Submitted
19	20201PET 0029	PAVAN GOUD	Submitted
20	20201PET 0030	AQIB AHMED SHARIEEF	Submitted
21	20201PET 0031	BANDLA HAREESH	Submitted
22	20201PET 0033	SHEKAR	Submitted
23	20201PET 0034	KOMMINENI HEMANTH	Submitted

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	24	20201PET 9001	MOHAMMED SHAHID	Submitted	
	25	20191PET 0009	C S NISHANT	Submitted	
	26	20191PET 0011	FAYAZ PASHA	Submitted	
	27	20211LPE 0001	MUHAMMED SWALIH V P	Submitted	

Signature of Instructor
Mr. Utkarsh Lall
Assistant Professor
Department of Petroleum Engineering

Dr. Suman Paul
Professor and Head
Department of Petroleum Engineering

Course Code/Course Name	PET2006 Fundamentals of Oil and Gas Production Technology
Event Type	Problem solving
Task	Course based exercise
Instructor	Mr Utkarsh Lall Assistant Professor, Department of Petroleum Engineering
Submission Date	01-12-2022
Name of the student	Zaheed Ahmed
ID number	20201PET0014

Problem statement	A gas lift valve with dome pressure 400 psi and spring pressure 150 psi is being used as operating valve at 7500 ft depth. The fluid in the tubing, with density 7.49 ppg, is causing a pressure 120 psi at the valve depth. If the valve area and bellow area is .21 sq inch and 1.71 sq inch, then determine the a) Opening and closing pressure for this valve, b) Spread.

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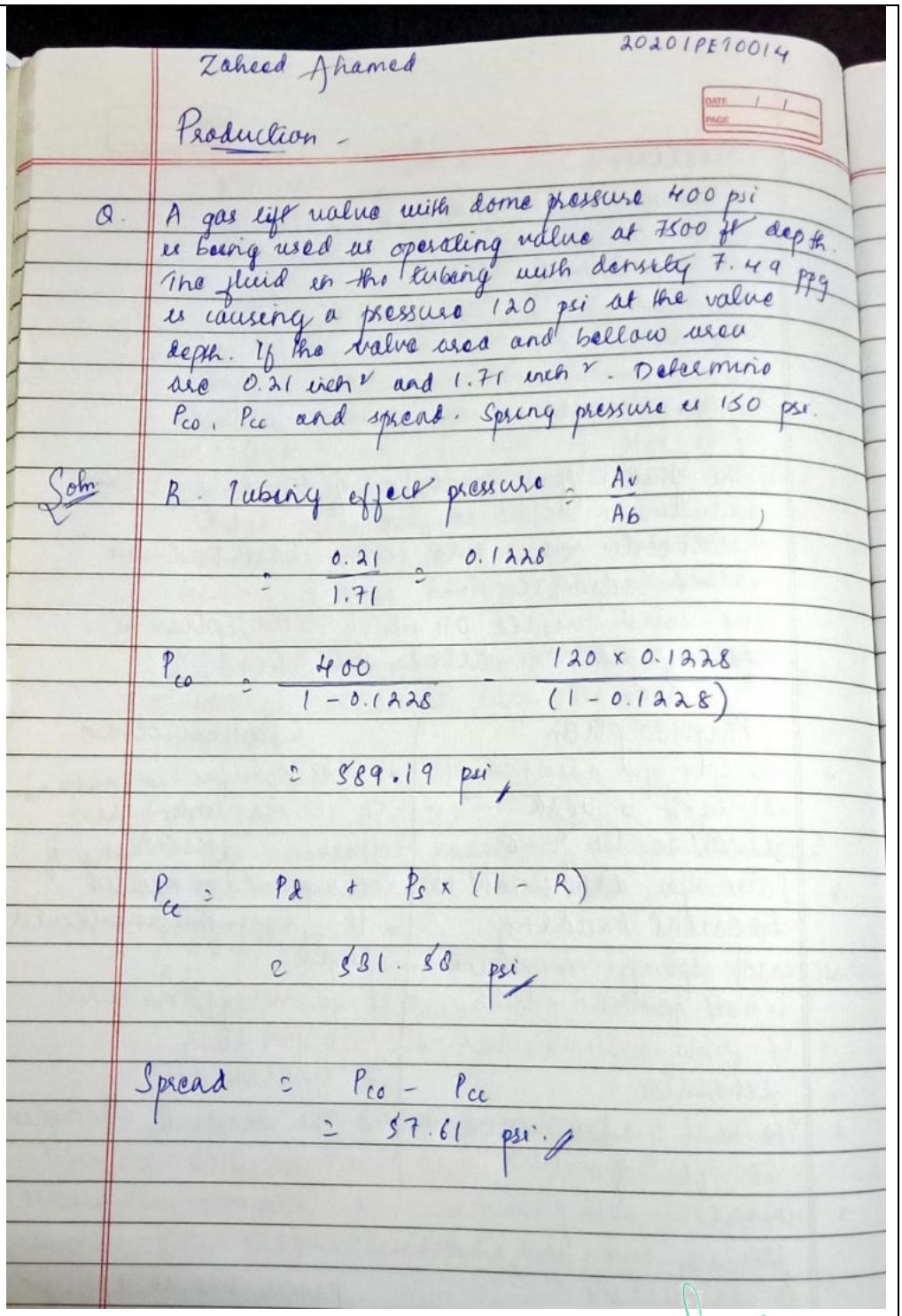
Student solution	
Evaluation	The evaluation was done by the students itself by exchanging their problem solutions so that they can learn about the simple calculation errors that can take place while solving the problems.

Instructor
Mr. Utkarsh Lall
Assistant Professor
Department of Petroleum Engineering

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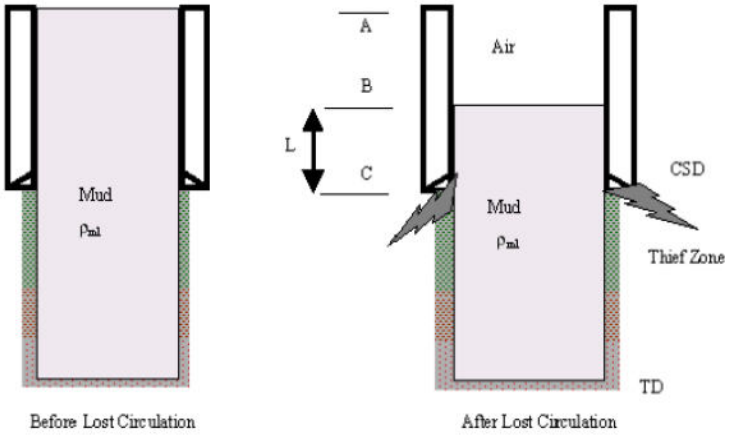
Department of Petroleum Engineering
Presidency University, Bengaluru
Itgalpur, Rajanakunte, Yelahanka, Bengaluru – 560064

Ref. No.: PU/SOE/PET/PS/2022-23/3PET1/CIR/01 Date: 25-11-2022

CIRCULAR

It is to inform all the students that they need to solve the following problem and upload in One drive on or before 04-12-2022.

Problem 1: Conductor casing was run in a well at 200 ft depth. The casing was run in the well with 11 ppg mud. To drill the next section 13 ppg mud was being used. But due to lost circulation the length of mud column in casing is reduced. Based on the above data , determine the collapse pressure for 3 cases : Point A , Point B and Point C (mentioned below in the figure).



Instructor
Mr. Utkarsh Lall
Assistant Professor
Department of Petroleum Engineering

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REPORT ON PROBLEM SOLVING

Circular Date and No.	Dtd: 25-11-2022 PU/SOE/PET/PS/2022-23/3PET1/CIR/01	**Date of Event**	04-12-2022
Type of learning	Problem Solving	**Event Type:**	Course based problem
Mode of Event:	Offline	**No. of Participant(s):**	30
Course Code/Course Name	PET2003 Fundamentals of Oil and Gas Well Drilling Technology		
Department	Department of Petroleum Engineering		
Instructor	Mr Utkarsh Lall Assistant Professor, Department of Petroleum Engineering		

Event objective	1. Develop numerical ability 2. Apply knowledge on Fundamentals of Drilling to solve problems
Name of the topic	1. To analyze the collapse pressure at different depths for casing design.
Outcome of the event	i. Solve Casing Design Problem.
Assessment	i. Type of Assessment: Solving advanced Numerical ii. Task Assigned: Solve one problem iii. Sample Report by students
Sample student report	Attached in the ANNEXURE

Attendance sheet

Sl. No.	ID No.	Student Name	Submission status
1	20211PET 0001	MOHAMED SAADULLAH S	Submitted
2	20211PET 0002	ROSHAN T	Submitted
3	20211PET 0003	SYED LUQMAN J	Submitted
4	20211PET 0004	BELIM MOH SAAD MOHAMMEDBHAI	Submitted
5	20211PET 0005	MOHAMMAD SUHAIL	Submitted

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	6	20211PET 0006	FAHAD ALI KHAN	Not Submitted
	7	20211PET 0008	VANKALA JAI SPHOORTHI	Submitted
	8	20211PET 0009	AFEEZ	Submitted
	9	20211PET 0010	HITHESH T	Submitted
	10	20211PET 0011	GANUGA ROSHAN	Submitted
	11	20211PET 0012	MOHAMED NAIF NIHAD ALI	Submitted
	12	20211PET 0013	DEEPAK JADHAV	Submitted
	13	20211PET 0014	DARSHAN D P	Submitted
	14	20211PET 0015	MOHAMMAD YASIR BYAKOD	Submitted
	15	20211PET 0016	ASMA THASNIM	Submitted
	16	20211PET 0017	IBRAHIM NAWAZ M	Submitted
	17	20211PET 0018	SANDEEP IYAGAR	Submitted
	18	20211PET 0019	KIRAN EKIRAN	Submitted
	19	20211PET 0020	YASHWANTH GOWDA M	Submitted
	20	20211PET 0021	MAYUR P	Submitted
	21	20211PET 0022	YASHWANTH S	Submitted
	22	20211PET 0023	MOHAMMED SHABAZ KHALANDER D	Submitted

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	23	20211PET 0024	BOLLAMA REDDY HIMAVENKATA MANKANTHA	Submitted	
	24	20211PET 0025	FAZIL SHAREEF H A	Submitted	
	25	20211PET 0026	PATEL MOHAMMED ADNAN MOHAMMED GOUS	Submitted	
	26	20211PET 0027	SYED USMAN	Submitted	
	27	20211PET 0001	MOHAMED SAADULLAH S	Submitted	
	28	20211PET 0002	ROSHAN T	Submitted	
	29	20211PET 0003	SYED LUQMAN J	Submitted	
	30	20211PET 0004	BELIM MOH SAAD MOHAMMEDBHAI	Submitted	

Signature of Instructor
Mr. Utkarsh Lall
Assistant Professor
Department of Petroleum Engineering

Dr. Suman Paul
Professor and Head
Department of Petroleum Engineering

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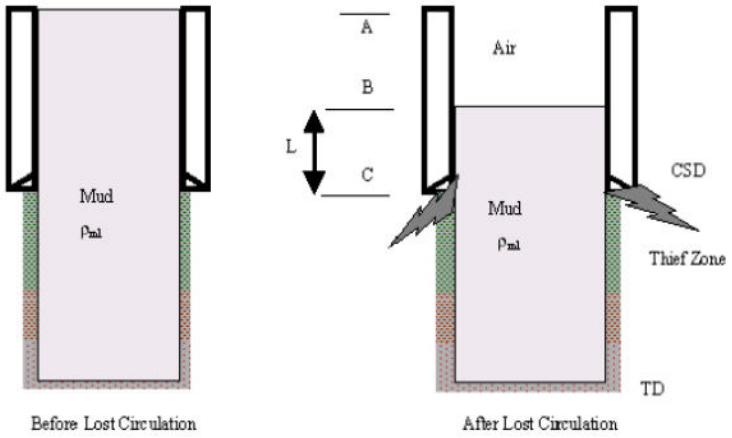
Course Code/Course Name	PET2003 Fundamentals of Oil and Gas Well Drilling Technology
Event Type	Problem solving
Task	Course based exercise
Instructor	Mr Utkarsh Lall Assistant Professor, Department of Petroleum Engineering
Submission Date	04-12-2022
Name of the student	Roshan T.
ID number	20211PET0002

Problem statement	Conductor casing was run in a well at 200 ft depth. The casing was run in the well with 11 ppg mud. To drill the next section 13 ppg mud was being used. But due to lost circulation the length of mud column in casing is reduced. Based on the above data , determine the collapse pressure for 3 cases : Point A , Point B and Point C (mentioned below in the figure). 
Student solution	

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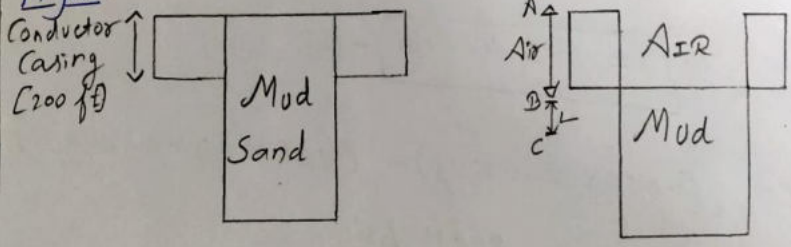
- ASSIGNMENT -

Name: Roshan.T
Roll No: 20211PET0002
COURSE CODE: PET2003
DATE : 04-12-2022

1) Conductor casing well at 200ft depth with 11ppg mud, to drill the next section 13ppg mud was being used. Due to lost circulation, the length of the mud column in casing to reduced. Determine the collapse pressure at point A, B, C.

=> Figure:



[∴ Δ = External Pressure - Internal Pressure]

$\Delta = 0$ — (1)

Pressure Gradient = psi/ft

$= 0.052 \times 8.65 \times 200 \times 1.1$

$= 0.465$ psi/ft

ΔP for Salt Water = 0.465 psi/ft

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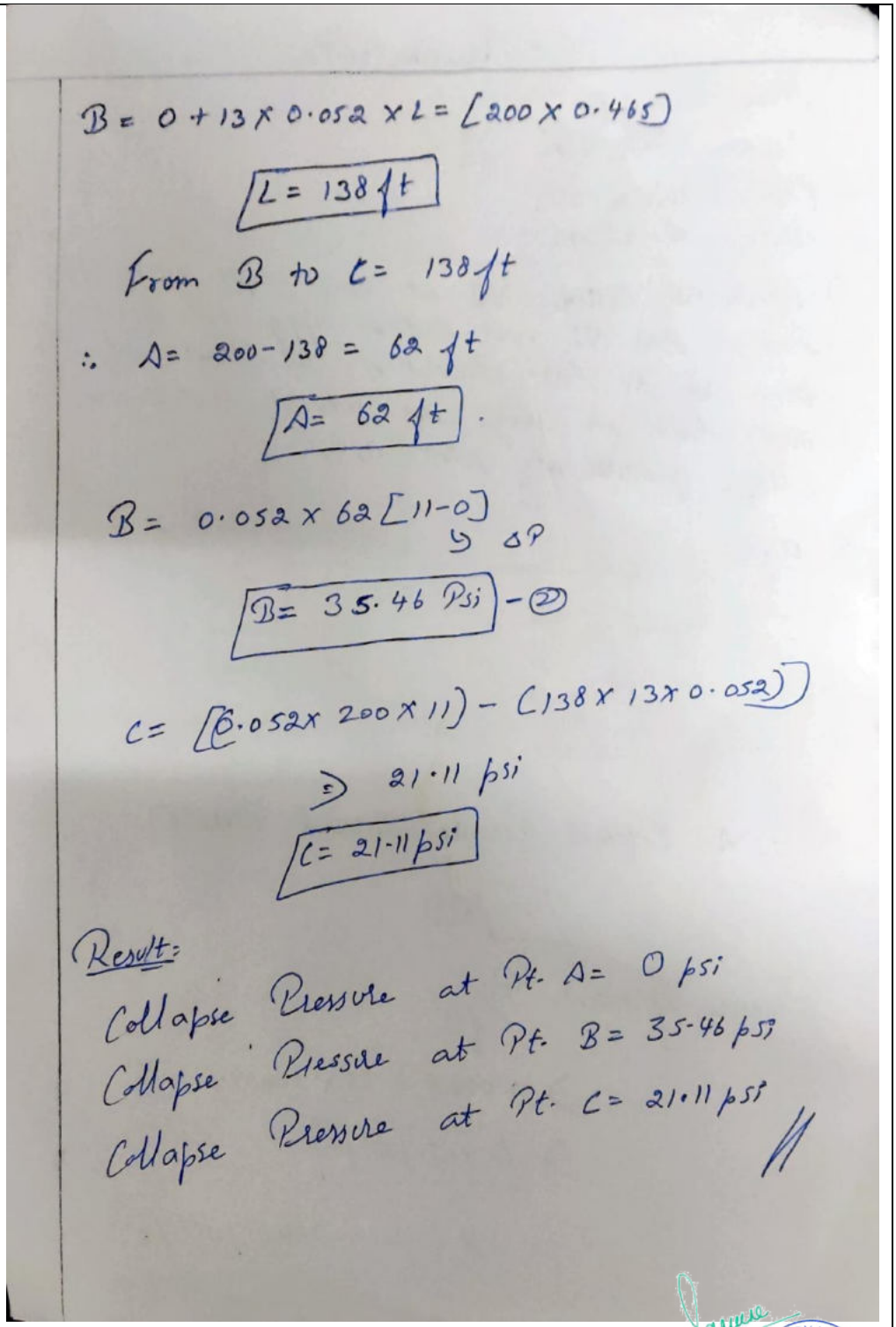

$B = 0 + 13 \times 0.052 \times L = [200 \times 0.465]$

$L = 138$ ft

From B to C = 138 ft

$\therefore A = 200 - 138 = 62$ ft

$A = 62$ ft.

$B = 0.052 \times 62 [11 - 0]$; ΔP

$B = 35.46$ Psi — (2)

$C = [(0.052 \times 200 \times 11) - (138 \times 13 \times 0.052)]$

$\Rightarrow 21.11$ psi

$C = 21.11$ psi

Result:

Collapse Pressure at Pt. A = 0 psi

Collapse Pressure at Pt. B = 35.46 psi

Collapse Pressure at Pt. C = 21.11 psi

Evaluation	The evaluation was done by the students itself by exchanging their problem solutions so that they can learn about the simple calculation errors that can take place while solving the problems.

Instructor
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Assistant Professor
Department of Petroleum Engineering

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Department of Petroleum Engineering
Presidency University, Bengaluru
Itgalpur, Rajanakunte, Yelahanka, Bengaluru – 560064

Ref. No.: PU/SOE/PET/PS/2022-23/7PET1/CIR/01 Date: 01-12-2022

CIRCULAR

It is to inform all the students that then need to solve the following case study and upload in One drive on or before 05-12-2022.

Problem 1: Means San Andres Unit. Stiles48 documented a comprehensive surveillance program used at the Means San Andres Unit. A detailed surveillance program was developed and implemented in 1975. It included monitoring production (oil, gas, and water) and water injection, controlling injection pressures with step-rate tests, pattern balancing with computer balance program, running injection profiles to ensure optimum distribution, selecting specific production profiles, and choosing fluid levels to ensure pump off of producing wells. Analyze and Find out what can be implemented during tertiary recovery (water-alternating-gas in- "Effective waterflood management requires a multidisciplinary team approach. "injection), but they also apply to waterflood surveillance. Identify the steps that can be implemented to increase vertical sweep and ultimate recovery.

Instructor
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Assistant Professor
Department of Petroleum Engineering

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REPORT ON PROBLEM SOLVING

Circular Date and No.	Dtd: 20-05-2022 PU/SOE/PET/PS/2022-23/7PET1/CIR/01	**Date of Event**	05-12-2022
Type of learning	Problem Solving	**Event Type:**	Course based problem
Mode of Event:	Online	**No. of Participant(s):**	15
Course Code/Course Name	PET 319 Oil Field Development and Reservoir Management		
Department	Department of Petroleum Engineering		
Instructor	Ms. Jain Mariyate Wilson Assistant Professor, Department of Petroleum Engineering		

Event objective	1. Develop computational ability 2. Apply knowledge on Remote Sensing to solve problems
Name of the topic	Case Study on "Surveillance Techniques-A Reservoir Management Approach"
Outcome of the event	i. It facilitates the exploration of a real issue within a defined context, using a variety of data sources
Assessment	i. Type of Assessment: solve the case study with suitable parameters ii. Task Assigned: Analyze the problem and solve iii. Sample Report by students
Sample student report	Attached in the ANNEXURE

Attendance sheet

Sl. No.	ID No.	Student Name	Submission status
1	20191PET 0004	ASHWIN RAJ R	Not Submitted
2	20191PET 0014	GANESH KUMAR POTHAN	Submitted
3	20191PET 0018	JESWIN JAVAD	Submitted
4	20191PET 0023	M MOHAMED ALFIATH	Submitted
5	20191PET 0025	MIDHUN SUBHASH	Submitted
6	20191PET 0028	MOHAMMED ADNAN	Submitted
7	20191PET 0029	MOHAMMED AFZAL	Submitted

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	8	20191PET 0030	MOHAMMED ISHAQ	Submitted	
	9	20191PET 0032	MOHAMMED MUZAMMIL PATVEGAR	Submitted	
	10	20191PET 0041	P SUHAIL AHMED	Submitted	
	11	20191PET 0053	SHRAVAN KUMAR M	Submitted	
	12	20191PET 0058	TAUSIF AHMED	Submitted	
	13	20191PET 9004	ANSTIN SUNNY	Submitted	
	14	20191PET 9006	SHABEER AHMED	Submitted	
	15	20201LPE 0002	SYED SADIQ PASHA K	Submitted	

Signature of Instructor
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Assistant Professor
Department of Petroleum Engineering

Dr. Suman Paul
Associate Professor and Head
Department of Petroleum Engineering

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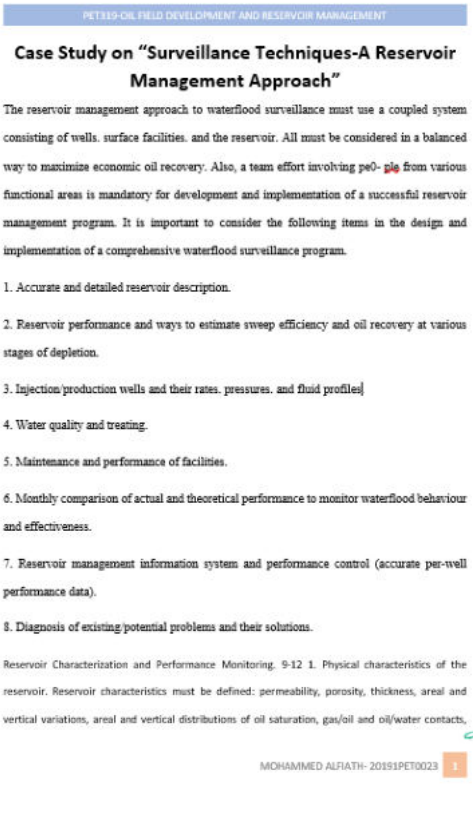
Course Code/Course Name	PET 319 Oil Field Development and Reservoir Management
Event Type	Problem solving
Task	Course based exercise
Instructor	Ms. Jain Mariyate Wilson Assistant Professor, Department of Petroleum Engineering
Submission Date	05-12-2022
Name of the student	MOHAMMED ALFIATH
ID number	20191PET0023

Problem statement	**Problem 1:** Means San Andres Unit. Stiles48 documented a comprehensive surveillance program used at the Means San Andres Unit. A detailed surveillance program was developed and implemented in 1975. It included monitoring production (oil, gas, and water) and water injection, controlling injection pressures with step-rate tests, pattern balancing with computer balance program, running injection profiles to ensure optimum distribution, selecting specific production profiles, and choosing fluid levels to ensure pump off of producing wells. Analyze and Find out what can be implemented during tertiary recovery (water-alternating-gas in- "Effective waterflood management requires a multidisciplinary team approach. "injection), but they also apply to waterflood surveillance. Identify the steps that can be implemented to increase vertical sweep and ultimate recovery.
Student solution	

PET319-OIL FIELD DEVELOPMENT AND RESERVOIR MANAGEMENT

Case Study on "Surveillance Techniques-A Reservoir Management Approach"

The reservoir management approach to waterflood surveillance must use a coupled system consisting of wells. surface facilities. and the reservoir. All must be considered in a balanced way to maximize economic oil recovery. Also, a team effort involving peo- ple from various functional areas is mandatory for development and implementation of a successful reservoir management program. It is important to consider the following items in the design and implementation of a comprehensive waterflood surveillance program.

1. Accurate and detailed reservoir description.
2. Reservoir performance and ways to estimate sweep efficiency and oil recovery at various stages of depletion.
3. Injection/production wells and their rates. pressures. and fluid profiles
4. Water quality and treating.
5. Maintenance and performance of facilities.
6. Monthly comparison of actual and theoretical performance to monitor waterflood behaviour and effectiveness.
7. Reservoir management information system and performance control (accurate per-well performance data).
8. Diagnosis of existing/potential problems and their solutions.

Reservoir Characterization and Performance Monitoring. 9-12 1. Physical characteristics of the reservoir. Reservoir characteristics must be defined: permeability, porosity, thickness, areal and vertical variations, areal and vertical distributions of oil saturation, gas/oil and oil/water contacts,

MOHAMMED ALFIATH- 20191PET0023 1

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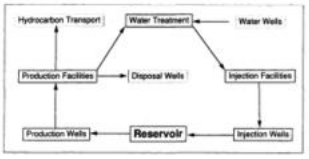
anisotropy (oriented fracture system or directional permeability),13 in-situ stress, 14 reservoir continuity, vertical flow conductivity, and portion of pay containing the bulk of recoverable oil. 15,16 To manage a waterflood accurately, detailed knowledge of the reservoir architecture also is necessary.

Primary performance: Wells indicating relatively high cumulative production may indicate high permeability and porosity, higher pay-zone thickness, or another pay zone. On the other hand, wells indicating relatively low cumulative production may indicate poor mechanical condition, wellbore skin damage, or isolated pay intervals.



"Effective waterflood management requires a multidisciplinary team approach."

Means San Andres Unit. Stiles48 documented a comprehensive surveillance program used at the Means San Andres Unit. A detailed surveillance program was developed and implemented in 1975. It included monitoring production (oil, gas, and water) and water injection, controlling injection pressures with step-rate tests, pattern balancing with computer balance program, running injection profiles to ensure optimum distribution, selecting specific production profiles, and choosing fluid levels to ensure pumpoff of producing wells. The following were implemented during tertiary recovery (water-alternating-gas in- jection), but they also apply to waterflood surveillance. • Areal flood balancing (optimizing the arrival of flood fronts at producers) performed by annual pressure-falloff tests in each injector and computer balancing programs. • Production/injection monitoring. • Data acquisition and monitoring. • Pattern performance monitoring to maximize oil recovery and flood efficiency by evaluating and optimizing the performance of each pattern. • Optimization (it must be dynamic and sensitive

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<td>Evaluation</td>
<td>Correct solution</td>
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</table>

Instructor
Ms. Jain Mariyate Wilson
Assistant Professor
Department of Petroleum Engineering

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Department of Petroleum Engineering
Presidency University, Bengaluru
Itgalpur, Rajanakunte, Yelahanka, Bengaluru – 560064

Ref. No.: PU/SOE/PET/PS/2022-23/3PET1/CIR/01 Date: 01-12-2022

CIRCULAR

It is to inform all the students that then need to solve the following case study and upload in One drive on or before 05-12-2022.

Problem 1: Albacore is a highly migratory tuna which supports important United States commercial and recreational fisheries. The migration, distribution, availability, and catchability of albacore are influenced by oceanographic conditions in the North Pacific. A small area around single albacore located by ultrasonic tracking and observed movements constrained by local temperature boundaries. Using the data provided, explain how boundaries for albacore aggregations and optimum fishing regions indicated

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REPORT ON PROBLEM SOLVING

Circular Date and No.	Dtd: 20-05-2022 PU/SOE/PET/PS/2022-23/3PET1/CIR/01	**Date of Event**	05-12-2022
Type of learning	Problem Solving	**Event Type:**	Course based problem
Mode of Event:	Offline	**No. of Participant(s):**	15
Course Code/Course Name	PET 2013 Introduction to Geoinformatics		
Department	Department of Petroleum Engineering		
Instructor	Ms. Jain Mariyate Wilson Assistant Professor, Department of Petroleum Engineering		

Event objective	1. Develop computational ability 2. Apply knowledge on Remote Sensing to solve problems
Name of the topic	1. Albacore Tuna Catch Distributions relative to environmental features observed from satellites.
Outcome of the event	i. It facilitates the exploration of a real issue within a defined context, using a variety of data sources
Assessment	i. Type of Assessment: solve the case study with suitable parameters ii. Task Assigned: Analyze the problem and solve iii. Sample Report by students
Sample student report	Attached in the ANNEXURE

Attendance sheet

Sl. No.	ID No.	Student Name	Submission status
1	20211PET 0003	SYED LUQMAN J	Submitted
2	20211PET 0005	MOHAMMAD SUHAIL	Submitted
3	20211PET 0009	AFEEZ	Submitted
4	20211PET 0010	HITHESH T	Submitted
5	20211PET 0011	GANUGA ROSHAN	Submitted
6	20211PET 0013	DEEPAK JADHAV	Submitted
7	20211PET 0014	DARSHAN D P	Submitted

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	8	20211PET 0015	MOHAMMAD YASIR BYAKOD	Submitted	
	9	20211PET 0017	IBRAHIM NAWAZ M	Submitted	
	10	20211PET 0020	YASHWANTH GOWDA M	Submitted	
	11	20211PET 0023	MOHAMMED SHABAZ KHALANDER D	Submitted	
	12	20211PET 0025	FAZIL SHAREEF H A	Submitted	
	13	20211PET 0026	PATEL MOHAMMED ADNAN MOHAMMED GOUS	Submitted	
	14	20191PET 0050	SHAIK GOUSPEER VALI	Submitted	
	15	20211PE T0028	ZOYA FALAK	Submitted	

Signature of Instructor
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Assistant Professor
Department of Petroleum Engineering

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Associate Professor and Head
Department of Petroleum Engineering

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Course Code/Course Name	PET 2013 Introduction to Geoinformatics
Event Type	Problem solving
Task	Course based exercise
Instructor	Ms. Jain Mariyate Wilson Assistant Professor, Department of Petroleum Engineering
Submission Date	05-12-2022
Name of the student	Zoya Falak
ID number	20211PET0028

Problem statement	**Problem 1:** Albacore is a highly migratory tuna which supports important United States commercial and recreational fisheries. The migration, distribution, availability, and catchability of albacore are influenced by oceanographic conditions in the North Pacific. A small area around single albacore located by ultrasonic tracking and observed movements constrained by local temperature boundaries. Using the data provided, explain how boundaries for albacore aggregations and optimum fishing regions are indicated
Student solution	

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	Results and Conclusion: • The coastal water is seen as a mass characterised by low temperature and high phytoplankton pigments to the north of pt. conception. The large plume of this water extending offshore to the south was a feature present for most of the year in the region. Fishing activity during 18 to 23 August was concentrated east of the plume in warm and blue oceanic water, as measured from the satellites. Only small catches were reported within the coastal water plume. The largest catches were in two pockets of oceanic water on the eastern edge of the plume. In the northern pocket, large catches were located close to the thermal front at the oceanic-coastal boundary. Fishing activity in the northern pocket peaked on 20 August, while activity in the southern pocket peaked on 17 August. Eastward movement of the southern pocket between 17 August and the satellite passes may explain the greater apparent separation between fishing activity and the front. • An intense and meandering frontal boundary extended south from Cape Mendocino, possibly associated with upwelling there and off Pt. Arena to the south. The SST and color fronts correspond almost exactly, although the 29 September color front was more diffuse than the 30 September SST front. Differences between concurrent images are due primarily to displacement of small-scale features and to the linear enhancement algorithms. The basic pattern of the front changed slightly over the 1-week period between the two sets of images. Note the changes in the shapes of the two pockets of warm, low-pigment water just south of Cape Mendocino. During 19 to 24 September and 27 September to 2 October, fishing boats were aggregated and took the largest catches in these two pockets of oceanic water. Some small catches were reported on the coastal side of the front and within the narrow cold-water plume northwest of Cape Mendocino. • Sea surface temperature increased gradually from 12°C at 48°N to 20°C at 40°N, and no temperature fronts were visible in the AVHRR image. However, a diffuse and broken color front is apparent in the center of the CZCS image. The oceanographic boundary defined by the color front marks an area of high fishing activity and large mean catches in relatively productive water. The concentration of fish in the lower right corner of the images, in a region obscured by clouds, was near the coast of northern California and most likely represents the same type of aggregation observed in the coastal images. • The satellite images and concurrent albacore catch data clearly show that the distribution and availability of albacore are related to oceanic fronts. They also substantiate the conventional wisdom of many fishermen who use temperature or color 'breaks' to locate potentially productive fishing areas for albacore. Our results show that in nearshore regions commercially fishable aggregations of albacore are found in warm, blue oceanic waters near temperature and color fronts on the seaward edge of coastal water masses. • Results also show that in offshore waters during late summer, commercial concentrations of albacore are associated with oceanic boundaries marked by color fronts detectable from satellites but without sea surface temperature gradients. The availability of albacore in offshore waters appears to be higher in relatively productive waters. • Albacore are believed to migrate to exploit the high densities of food organisms available in North American coastal waters. Albacore are opportunistic carnivores and consume northern anchovy, sanry, euphausiids, squid, and decapod shrimp off California (Pnow, xs et al., 1971). Suboptimum temperatures may limit them to the edges of the productive coastal water mass where such organisms are most abundant. • We see that both i.r. and visible color data from satellites can define environmental limits on the spatial distribution of fishable aggregations of albacore and can do so more effectively than ship or aircraft data as used in the past.
Evaluation	Correct solution

Instructor
Ms. Jain Mariyate Wilson
Assistant Professor
Department of Petroleum Engineering

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Presidency University, Bengaluru
Itgalpur, Rajanakunte, Yelahanka, Bengaluru – 560064

Ref. No.: PU/SOE/PET/PS/2022-23/5PET1/CIR/01 Date: 10-10-2022

CIRCULAR

It is to inform all the students that then need to solve the following numericals and upload in One drive on or before 14-10-2022.

Problem 1: If 10,000ft of drill pipe is used, determine the max collapse pressure that can be encountered and the resulting safety factor. The mud density is 75pcf. If the fluid level inside the drill pipe drops to 6000ft below the rotary table, determine the new safety factor for grade- X95

Problem 2: Assuming 10,000ft of grade X95 drill pipe has been selected, weight of dp = 19.5ft, Length of dc= 600ft, weight of dc is 160 and BF= 0.84.

1. Determine the safety factor during drilling
2. Determine the magnitude of shock loading
3. Determine safety factor when shock loading is included

Instructor
Ms. Jain Mariyate Wilson
Assistant Professor
Department of Petroleum Engineering

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REPORT ON PROBLEM SOLVING

Circular Date and No.	Dtd: 20-05-2022 PU/SOE/PET/PS/2022-23/5PET1/CIR/01	**Date of Event**	14-10-2022
Type of learning	Problem Solving	**Event Type:**	Course based problem
Mode of Event:	Offline	**No. of Participant(s):**	12
Course Code/Course Name	PET 3004 ADVANCED WELL ENGINEERING		
Department	Department of Petroleum Engineering		
Instructor	Ms. Jain Mariyate Wilson Assistant Professor, Department of Petroleum Engineering		

Event objective	1. Develop computational ability
Name of the topic	1. Design of Drill String
Outcome of the event	1. Problem solving places the focus on the student making sense of mathematical ideas 2. And it basically encourages the students to believe in their ability to think mathematically.
Assessment	i. Type of Assessment: solve the numerical with suitable parameters ii. Task Assigned: Analyze the problem and solve iii. Sample Report by students
Sample student report	Attached in the ANNEXURE

Attendance sheet

Sl. No.	ID No.	Student Name	Submission status
1	20201PET0004	RACHAN BALAKRISHNA SHETTY	Submitted
2	20201PET0006	PRAVEEN B	Submitted
3	20201PET0008	NALLABHOTULA DUSHYANTH	Submitted
4	20201PET0009	KOTISHWARAN V	Submitted
5	20201PET0011	A M RIZWAN	Submitted
6	20201PET0016	SIDHARTH MURALI	Submitted

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	7	20201PET 0017	BHOOMIKA SATISH	Submitted	
	8	20201PET 0021	R JANARDHAN REDDY	Submitted	
	9	20201PET 0023	PRATHIVRAJ S	Submitted	
	10	20201PET 0029	PAVAN GOUD	Submitted	
	11	20201PET 0030	AQIB AHMED SHARIEEF	Submitted	
	12	20201PET 0031	BANDLA HAREESH	Submitted	
	13	20201PET 0034	KOMMINENI HEMANTH	Submitted	
	14	20191PET 0011	FAYAZ PASHA	Submitted	

Signature of Instructor
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Associate Professor and Head
Department of Petroleum Engineering

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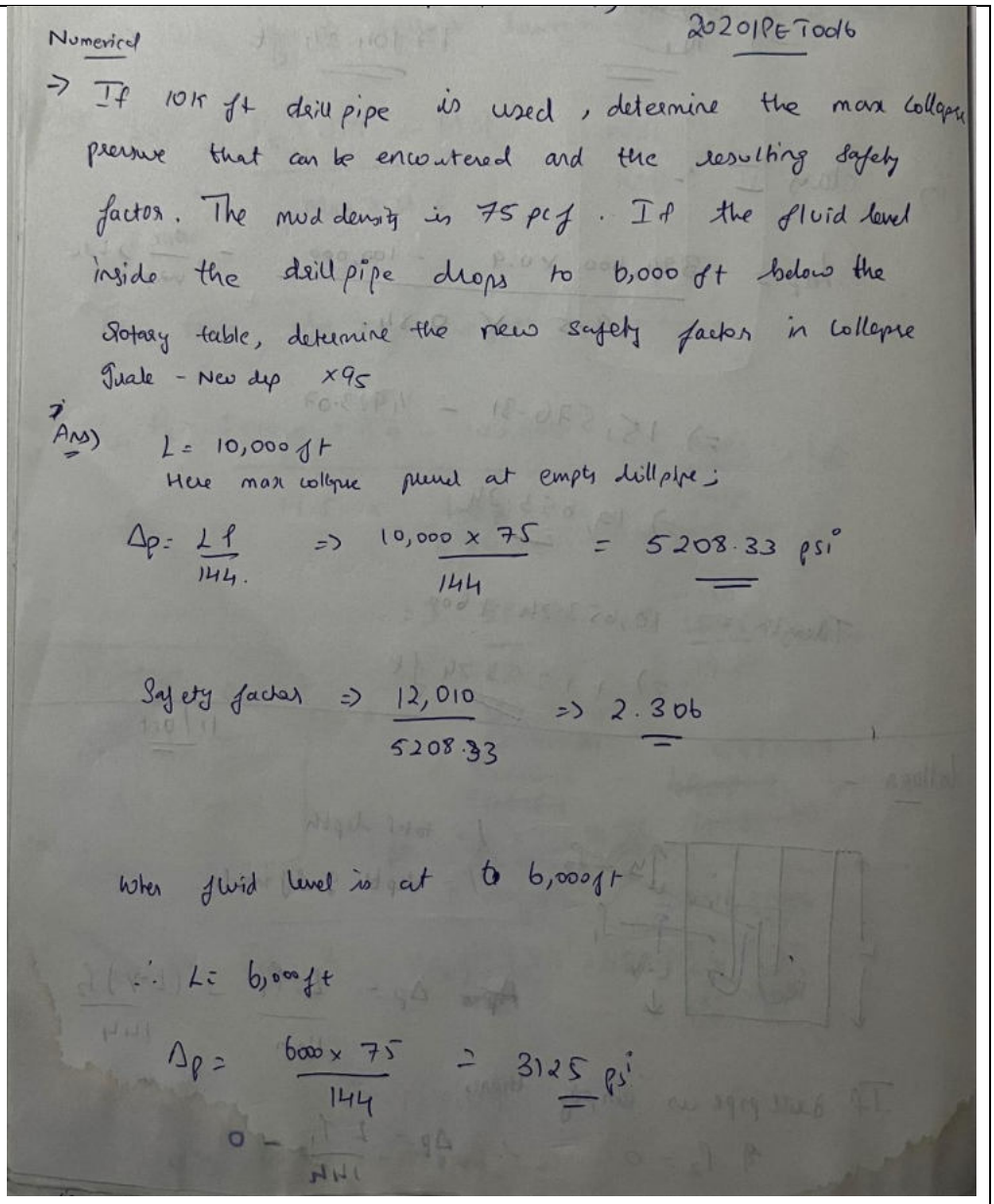
Course Code/Course Name	PET3004/Advanced Well Engineering (AWE)
Event Type	Problem Solving
Task	Numerical
Instructor	Ms. Jain Mariyate Wilson
Submission Date	14-10-2022
Name of the student	Sidharth Murali
ID number	20201PET0016

Problem statement	**Problem 1**: If 10,000ft of drill pipe is used, determine the max collapse pressure that can be encountered and the resulting safety factor. The mud density is 75pcf. If the fluid level inside the drill pipe drops to 6000ft below the rotary table, determine the new safety factor for grade- X95 **Problem 2**: Assuming 10,000ft of grade X95 drill pipe has been selected, weight of dp = 19.5ft, Length of dc= 600ft, weight of dc is 160 and BF= 0.84. 1. Determine the safety factor during drilling 2. Determine the magnitude of shock loading 3. Determine safety factor when shock loading is included

Student solution



Numerical 20201PET006

→ If 10k ft drill pipe is used, determine the max collapse pressure that can be encountered and the resulting safety factor. The mud density is 75 pcf. If the fluid level inside the drill pipe drops to 6,000 ft below the Rotary table, determine the new safety factor in collapse Scale - New dip ×95

Ans) L = 10,000 ft

Here max collapse pressure at empty drillpipe;

$\Delta p = \frac{Lf}{144} \Rightarrow \frac{10,000 \times 75}{144} = 5208.33$ psi

Safety factor $\Rightarrow \frac{12,010}{5208.33} \Rightarrow 2.306$

When fluid level is at 6,000 ft

∴ L = 6,000 ft

$\Delta p = \frac{6000 \times 75}{144} = 3125$ psi

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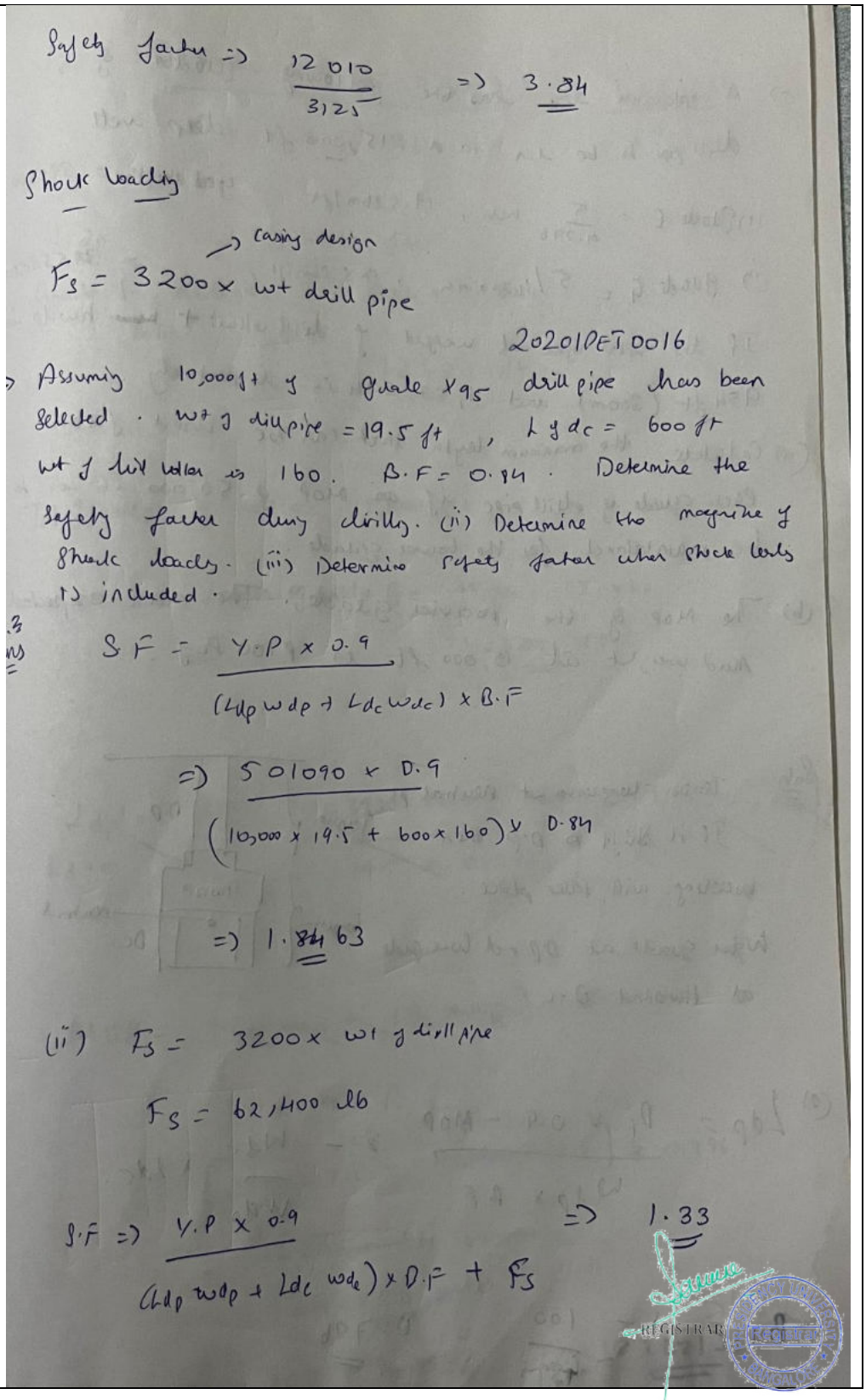

Safety factor => 12 010 / 3121 => 3.84

Shock loading

→ casing design

F_s = 3200 × wt of drill pipe

20201PET0016

Assuming 10,000 ft of grade x95 drill pipe has been selected. wt of drill pipe = 19.5 ft, Length of dc = 600 ft wt of drill collar is 160. B.F = 0.84. Determine the safety factor during drilling. (ii) Determine the magnitude of shock loads. (iii) Determine safety factor when shock load is included.

$$S.F = \frac{Y.P \times 0.9}{(L_{dp} w_{dp} + L_{dc} w_{dc}) \times B.F}$$

$$\Rightarrow \frac{501090 \times 0.9}{(10{,}000 \times 19.5 + 600 \times 160) \times 0.84}$$

$$\Rightarrow 1.8463$$

(ii) F_s = 3200 × wt of drill pipe

F_s = 62,400 lb

$$S.F \Rightarrow \frac{Y.P \times 0.9}{(L_{dp} w_{dp} + L_{dc} w_{dc}) \times B.F + F_s} \Rightarrow 1.33$$

Evaluation	Answer is Correct

Instructor
Ms. Jain Mariyate Wilson
Assistant Professor
Department of Petroleum Engineering

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Course Code/Course Name	PET 320 Remote Sensing & GIS
Event Type	Problem solving
Task	Course based exercise
Instructor In charge	Ms. Jain Mariyate Wilson Assistant Professor, Department of Petroleum Engineering
Submission Date	14-06-2022
Name of the student	Taniya K G
ID number	20191PET0055

Problem statement	**Problem 1:** Albacore is a highly migratory tuna which supports important United States commercial and recreational fisheries. The migration, distribution, availability, and catchability of albacore are influenced by oceanographic conditions in the North Pacific. A small area around single albacore located by ultrasonic tracking and observed movements constrained by local temperature boundaries. Using the data provided, explain how boundaries for albacore aggregations and optimum fishing regions are indicated
Student solution	

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	Results and Conclusion: • The coastal water is seen as a mass characterised by low temperature and high phytoplankton pigments to the north of pt. conception. The large plume of this water extending offshore to the south was a feature present for most of the year in the region. Fishing activity during 18 to 23 August was concentrated east of the plume in warm and blue oceanic water, as measured from the satellites. Only small catches were reported within the coastal water plume. The largest catches were in two pockets of oceanic water on the eastern edge of the plume. In the northern pocket, large catches were located close to the thermal front at the oceanic-coastal boundary. Fishing activity in the northern pocket peaked on 20 August, while activity in the southern pocket peaked on 17 August. Eastward movement of the southern pocket between 17 August and the satellite passes may explain the greater apparent separation between fishing activity and the front. • An intense and meandering frontal boundary extended south from Cape Mendocino, possibly associated with upwelling there and off Pt. Arena to the south. The SST and color fronts correspond almost exactly, although the 29 September color front was more diffuse than the 30 September SST front. Differences between concurrent images are due primarily to displacement of small-scale features and to the linear enhancement algorithms. The basic pattern of the front changed slightly over the 1-week period between the two sets of images. Note the changes in the shapes of the two pockets of warm, low-pigment water just south of Cape Mendocino. During 19 to 24 September and 27 September to 2 October, fishing boats were aggregated and took the largest catches in these two pockets of oceanic water. Some small catches were reported on the coastal side of the front and within the narrow cold-water plume northwest of Cape Mendocino. • Sea surface temperature increased gradually from 12°C at 48°N to 20°C at 40°N, and no temperature fronts were visible in the AVHRR image. However, a diffuse and broken color front is apparent in the center of the CZCS image. The oceanographic boundary defined by the color front marks an area of high fishing activity and large mean catches in relatively productive water. The concentration of fish in the lower right corner of the images, in a region obscured by clouds, was near the coast of northern California and most likely represents the same type of aggregation observed in the coastal images. • The satellite images and concurrent albacore catch data clearly show that the distribution and availability of albacore are related to oceanic fronts. They also substantiate the conventional wisdom of many fishermen who use temperature or color 'breaks' to locate potentially productive fishing areas for albacore. Our results show that in nearshore regions commercially fishable aggregations of albacore are found in warm, blue oceanic waters near temperature and color fronts on the seaward edge of coastal water masses. • Results also show that in offshore waters during late summer, commercial concentrations of albacore are associated with oceanic boundaries marked by color fronts detectable from satellites but without sea surface temperature gradients. The availability of albacore in offshore waters appears to be higher in relatively productive waters. • Albacore are believed to migrate to exploit the high densities of food organisms available in North American coastal waters. Albacore are opportunistic carnivores and consume northern anchovy, sanry, euphausiids, squid, and decapod shrimp off California (Pnce, xs et al., 1971). Suboptimum temperatures may limit them to the edges of the productive coastal water mass where such organisms are most abundant. • We see that both i.r. and visible color data from satellites can define environmental limits on the spatial distribution of fishable aggregations of albacore and can do so more effectively than ship or aircraft data as used in the past.
Evaluation	Correct solution

Instructor In-charge
Ms. Jain Mariyate Wilson
Assistant Professor
Department of Petroleum Engineering

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GAIN MORE KNOWLEDGE
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Department of Petroleum Engineering
Presidency University, Bengaluru
Itgalpur, Rajanakunte, Yelahanka, Bengaluru – 560064

Ref. No.: PU/SOE/PET/PS/2021-22/6PET1/CIR/01 Date: 07-06-2022

CIRCULAR

It is to inform all the students that then need to solve the following case study and upload in One drive on or before 14-06-2022.

Problem 1: Albacore is a highly migratory tuna which supports important United States commercial and recreational fisheries. The migration, distribution, availability, and catchability of albacore are influenced by oceanographic conditions in the North Pacific. A small area around single albacore located by ultrasonic tracking and observed movements constrained by local temperature boundaries. Using the data provided, explain how boundaries for albacore aggregations and optimum fishing regions indicated

Instructor In-charge
Ms. Jain Mariyate Wilson
Assistant Professor
Department of Petroleum Engineering

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REPORT ON PROBLEM SOLVING

Circular Date and No.	Dtd: 20-05-2022 PU/SOE/PET/PS/2021-22/6PET1/CIR/01	**Date of Event**	14-06-2022
Type of learning	Problem Solving	**Event Type:**	Course based problem
Mode of Event:	Offline	**No. of Participant(s):**	17
Course Code/Course Name	PET 320 REMOTE SENSING & GIS		
Department	Department of Petroleum Engineering		
Instructor In charge	MS. Jain Mariyate Wilson Assistant Professor, Department of Petroleum Engineering		

Event objective	1. Develop computational ability 2. Apply knowledge on Remote Sensing to solve problems
Name of the topic	1. Albacore Tuna Catch Distributions relative to environmental features observed from satellites.
Outcome of the event	i. It facilitates the exploration of a real issue within a defined context, using a variety of data sources
Assessment	i. Type of Assessment: solve the case study with suitable parameters ii. Task Assigned: Analyze the problem and solve iii. Sample Report by students
Sample student report	Attached in the ANNEXURE

Attendance sheet

Sl. No.	ID No.	Student Name	Submission status
1	20191PET 0003	AMAN TAHASILDAR	Submitted
2	20191PET 0008	BIRAJDAR SAURABH SURYAKANT	Submitted
3	20191PET 0009	C S NISHANT	Submitted
4	20191PET 0021	KRITIKA	Submitted
5	20191PET 0024	MIDHUN M M	Submitted
6	20191PET 0028	MOHAMMED ADNAN	Submitted
7	20191PET 0034	MOHAMMED TAHA NAJEEB BASHA	Submitted

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	8	20191PET 0035	MOHAMMED UZMAIR M	Submitted	
	9	20191PET 0036	MOHAMMED ZAIN Y C	Submitted	
	10	20191PET 0040	NAGAM VENKATA MAHARSHI VASISTA	Submitted	
	11	20191PET 0053	SHRAVAN KUMAR M	Submitted	
	12	20191PET 0055	TANIYA K G	Submitted	
	13	20191PET 0057	TAUSEEF NAZIR	Submitted	
	14	20191PET 0060	THUFAIL MAJEED A MA M	Submitted	
	15	20191PET 9006	SHABEER AHMED	Submitted	
	16	20191PET 9007	JAFFAR SADIQ M R	Submitted	
	17	20201LPE 0002	SYED SADIQ PASHA K	Submitted	

Signature of Instructor In charge
Ms. Jain Mariyate Wilson
Assistant Professor
Department of Petroleum Engineering

Dr. Suman Paul
Associate Professor and Head
Department of Petroleum Engineering

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GAIN MORE KNOWLEDGE
REACH GREATER HEIGHTS

Department of Petroleum Engineering
Presidency University, Bengaluru
Itgalpur, Rajanakunte, Yelahanka, Bengaluru – 560064

Ref. No.: PU/SOE/PET/PS/2021-22/2PET1/CIR/01 Date: 04-06-2022

CIRCULAR

It is to inform all the students that then need to solve the following problems and upload in One drive on or before 03-06-2022.

Problem 1: It is required to reduce mud weight from 25.1 ppg to 22.6 ppg in order to combat a lost circulation problem. Calculate the volumes of water and oil required to bring about this reduction. Also, if oil is used, what is the percentage of oil in mud if the initial volume of mud is 629 bbl. The density of oil is 6.87 ppg.

Problem 2:

It is desired to increase the density of 200 bbl of 10 ppg mud to 12 ppg mud using API Barite of density 35 ppg. The final volume is not limited.
[1 bbl = 42 gallons]

The amount of API Barite required is _____ lbm.

Instructor In-charge
Mr. Bhairab Jyoti Gogoi
Assistant Professor
Department of Petroleum Engineering

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REPORT ON PROBLEM SOLVING

Circular Date and No.	Dtd: 20-05-2022 PU/SOE/PET/PS/2021-22/2PET1/CIR/01	**Date of Event**	03-06-2022
Type of learning	Problem Solving	**Event Type:**	Course based problem
Mode of Event:	Offline	**No. of Participant(s):**	26
Course Code/Course Name	PET 2001 DRILLING FLUID TECHNOLOGY		
Department	Department of Petroleum Engineering		
Instructor In charge	Mr Bhairab Jyoti Gogoi Assistant Professor, Department of Petroleum Engineering		

Event objective	1. Develop computational ability 2. Apply knowledge on Drilling fluid technology to solve problems
Name of the topic	1. Mud weight increase calculation 2. Mud weight decrease calculation
Outcome of the event	i. Solve GATE MCQ on Drill Fluid
Assessment	i. Type of Assessment: Solving advanced Numerical ii. Task Assigned: Solve two problem iii. Sample Report by students
Sample student report	Attached in the ANNEXURE

Attendance sheet

Sl. No.	ID No.	Student Name	Submission status
1	20211PET 0001	MOHAMED SAADULLAH S	Submitted
2	20211PET 0002	ROSHAN T	Submitted
3	20211PET 0003	SYED LUQMAN J	Submitted
4	20211PET 0004	BELIM MOH SAAD MOHAMMEDBHAI	Submitted
5	20211PET 0005	MOHAMMAD SUHAIL	Submitted
6	20211PET 0006	FAHAD ALI KHAN	Submitted
7	20211PET 0008	VANKALA JAI SPHOORTHI	Submitted

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	8	20211PET0009	AFEEZ	Submitted	
	9	20211PET0010	HITHESH T	Submitted	
	10	20211PET0011	GANUGA ROSHAN	Submitted	
	11	20211PET0012	MOHAMED NAIF NIHAD ALI	Submitted	
	12	20211PET0013	DEEPAK JADHAV	Submitted	
	13	20211PET0014	DARSHAN D P	Submitted	
	14	20211PET0015	MOHAMMAD YASIR BYAKOD	Submitted	
	15	20211PET0016	ASMA THASNIM	Submitted	
	16	20211PET0017	IBRAHIM NAWAZ M	Submitted	
	17	20211PET0018	SANDEEP IYAGAR	Submitted	
	18	20211PET0019	KIRAN EKIRAN	Submitted	
	19	20211PET0020	YASHWANTH GOWDA M	Submitted	
	20	20211PET0021	MAYUR P	Submitted	
	21	20211PET0022	YASHWANTH S	Submitted	
	22	20211PET0023	MOHAMMED SHABAZ KHALANDER D	Submitted	
	23	20211PET0024	BOLLAMA REDDY HIMAVENKATA MANKANTHA	Submitted	
	24	20211PET0025	FAZIL SHAREEF H A	Submitted	
	25	20211PET0026	PATEL MOHAMMED ADNAN MOHAMMED GOUS	Submitted	
	26	20211PET0027	SYED USMAN	Submitted	

Signature of Instructor In charge
Mr. Bhairab Jyoti Gogoi
Assistant Professor
Department of Petroleum Engineering

Dr. Suman Paul
Associate Professor and Head
Department of Petroleum Engineering

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Course Code/Course Name	PET 2001 Drilling Fluid Technology
Event Type	Problem solving
Task	Course based exercise
Instructor In charge	Mr Bhairab Jyoti Gogoi Assistant Professor, Department of Petroleum Engineering
Submission Date	03-06-2022
Name of the student	V Jai Sphoorthi
ID number	20211PET0008

Problem statement	It is required to reduce mud weight from 25.1 ppg to 22.6 ppg in order to combat a lost circulation problem. Calculate the volumes of water and oil required to bring about this reduction. Also, if oil is used, what is the percentage of oil in mud if the initial volume of mud is 629 bbl. The density of oil is 6.87 ppg.
Student solution	

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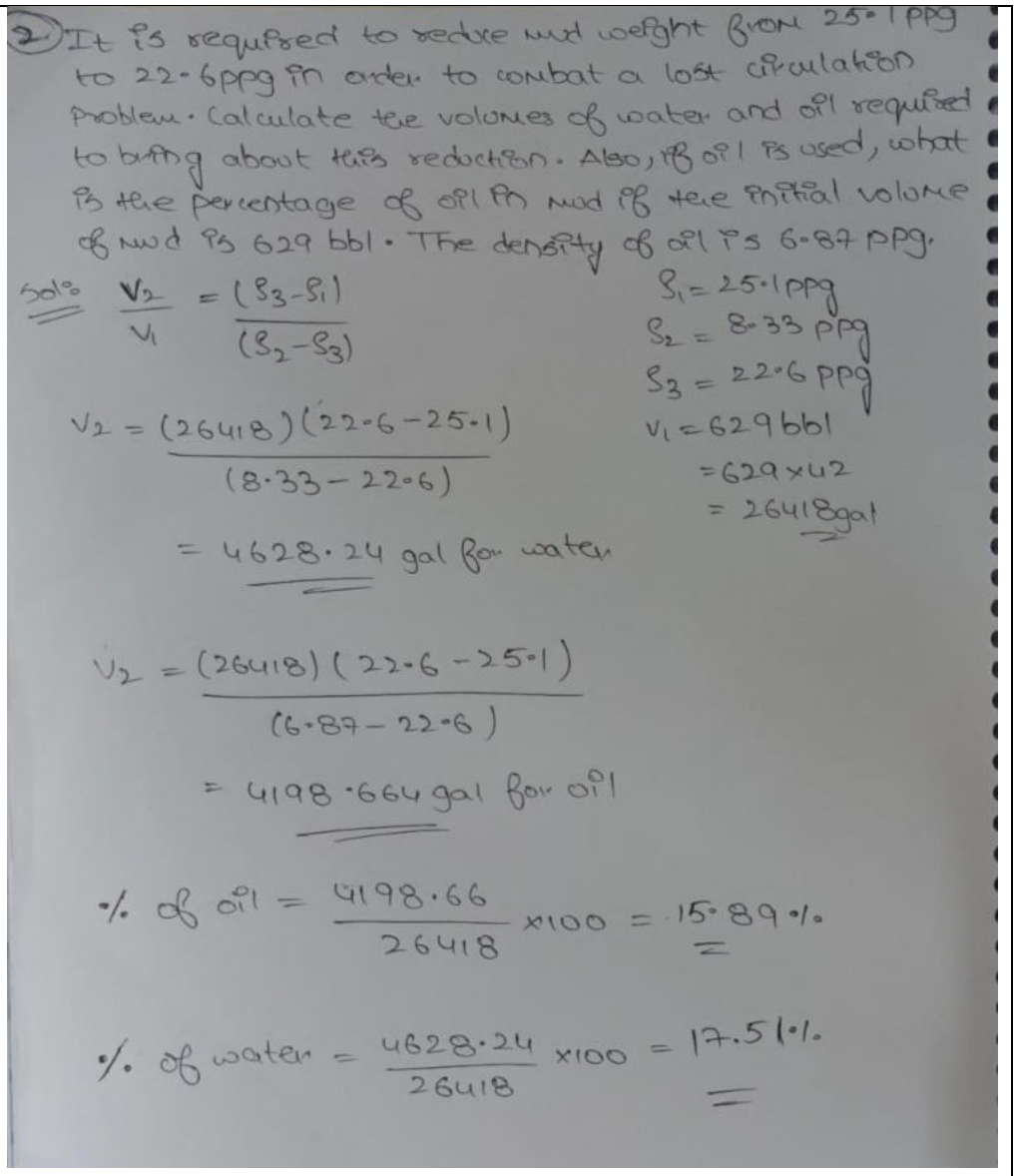

(2) It is required to reduce mud weight from 25.1 ppg to 22.6 ppg in order to combat a lost circulation problem. Calculate the volumes of water and oil required to bring about this reduction. Also, if oil is used, what is the percentage of oil in mud if the initial volume of mud is 629 bbl. The density of oil is 6.87 ppg.

Sol^n

$$\frac{V_2}{V_1} = \frac{(\rho_3 - \rho_1)}{(\rho_2 - \rho_3)}$$

$\rho_1 = 25.1$ ppg
$\rho_2 = 8.33$ ppg
$\rho_3 = 22.6$ ppg
$V_1 = 629$ bbl
$= 629 \times 42$
$= 26418$ gal

$$V_2 = \frac{(26418)(22.6 - 25.1)}{(8.33 - 22.6)}$$

$= 4628.24$ gal for water

$$V_2 = \frac{(26418)(22.6 - 25.1)}{(6.87 - 22.6)}$$

$= 4198.664$ gal for oil

$$\% \text{ of oil} = \frac{4198.66}{26418} \times 100 = 15.89\%$$

$$\% \text{ of water} = \frac{4628.24}{26418} \times 100 = 17.51\%$$

Evaluation	Correct solution

Instructor In-charge
Mr. Bhairab Jyoti Gogoi
Assistant Professor
Department of Petroleum Engineering

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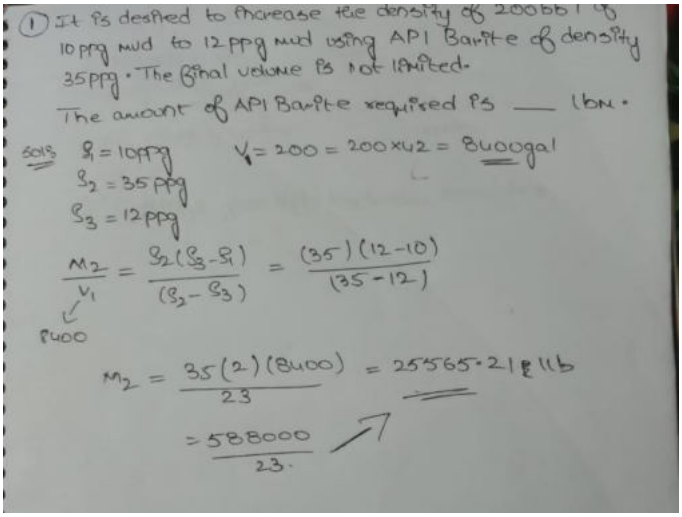
PRESIDENCY UNIVERSITY Registrar BANGALORE

Course Code/Course Name	PET 2001 Drilling Fluid Technology
Event Type	Problem solving
Task	Course based exercise
Instructor In charge	Mr Bhairab Jyoti Gogoi Assistant Professor, Department of Petroleum Engineering
Submission Date	03-06-2022
Name of the student	V Jai Sphoorthi
ID number	20211PET0008

Problem statement	It is desired to increase the density of 200 bbl of 10 ppg mud to 12 ppg mud using API Barite of density 35 ppg. The final volume is not limited. [1 bbl = 42 gallons] The amount of API Barite required is _____ lbm.
Student solution	
Evaluation	Correct solution

Instructor In-charge
Mr. Bhairab Jyoti Gogoi
Assistant Professor
Department of Petroleum Engineering

REGISTRAR

GAIN MORE KNOWLEDGE
REACH GREATER HEIGHTS

Department of Petroleum Engineering
Presidency University, Bengaluru
Itgalpur, Rajanakunte, Yelahanka, Bengaluru – 560064

Ref. No.: PU/SOE/PET/PS/2021-22/6PET1/CIR/01 Date: 23-05-2022

CIRCULAR

It is to inform all the students that then need to solve the following numerical in the class and submit a report on or before 10-06-2022.

Problem 1: (a) A polydisperse sample of polystyrene is prepared by mixing three monodisperse samples in the following proportions:

1 g	10,000 molecular weight
2 g	50,000 molecular weight
2 g	100,000 molecular weight

Using this information, calculate the number-average molecular weight, weight-average molecular weight, and PDI of the mixture.

Problem 2: Calculate the mobility ratio for the fluid used in water flooding project, when if permeability of oil is 0.85D and permeability water is 0.35D, and viscosity of oil is 7.5cP and water is 1cP. If viscosity is increased by adding polymer to the water to 5cP, calculate the mobility ratio? In which case is the mobility ratio favourable?

Prathibha Pillai

Instructor In-charge
Ms. Prathibha Pillai
Assistant Professor
Department of Petroleum Engineering

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REPORT ON PROBLEM SOLVING

Circular Date and No.	Dtd: 23-05-2022 PU/SOE/PET/PS/2021-22/6PET1/CIR/01	**Date of Event**	10-06-2022
Type of learning	Problem Solving	**Event Type:**	Course based problem
Mode of Event:	Offline	**No. of Participant(s):**	30
Course Code/Course Name	PET 406 POLYMER TECHNOLOGY		
Department	Department of Petroleum Engineering		
Instructor In charge	Ms. Prathibha Pillai Assistant Professor, Department of Petroleum Engineering		

Event objective	1. Develop computational ability
Name of the topic	1. Polymer Flooding
Outcome of the event	1. Problem solving places the focus on the student making sense of mathematical ideas 2. And it basically encourages the students to believe in their ability to think mathematically.
Assessment	i. Type of Assessment: solve the numerical with suitable parameters ii. Task Assigned: Analyze the problem and solve iii. Sample Report by students
Sample student report	Attached in the ANNEXURE
Attendance sheet	

SL. No.	ID NUMBER	NAME	SUBMISSION STATUS
1	20191PET0001	AHIL SHA MC	SUBMITTED
2	20191PET0002	AKASH S	SUBMITTED
3	20191PET9004	ANSTIN SUNNY	SUBMITTED
4	20191PET0004	ASHWIN RAJ R	SUBMITTED
5	20191PET0005	ASWIN K S	SUBMITTED
6	20191PET0013	FIROZA SHEIKH	SUBMITTED
7	20191PET0014	GANESH KUMAR POTHAN	SUBMITTED
8	20191PET0015	GILAKA PAVAN	SUBMITTED
9	20191PET0016	HARI GOVIND V	SUBMITTED
10	20191PET9007	JAFFAR SADIQ M R	SUBMITTED

	11	20191PET0018	JESWIN JAVAD	SUBMITTED
	12	20191PET0019	KADIRI LALITHA	SUBMITTED
	13	20201LPE0001	MALIPEDDU SAI PRANAV	SUBMITTED
	14	20191PET0025	MIDHUN SUBHASH	SUBMITTED
	15	20191PET0026	MOHAMED MUNAWAR HUSSAIN M	SUBMITTED
	16	20191PET0027	MOHAMED SUHAIL	SUBMITTED
	17	20191PET0030	MOHAMMED ISHAQ	SUBMITTED
	18	20191PET0038	MOIDEEN ANSAF	SUBMITTED
	19	20191PET0064	MUHAMMED SAFAL S	SUBMITTED
	20	20191PET0041	P SUHAIL AHMED	SUBMITTED
	21	20191PET9002	PILLI KALYAN KUM	SUBMITTED
	22	20191PET0043	RISHU SINGH	SUBMITTED
	23	20191PET0068	RIZWAN	SUBMITTED
	24	20191PET0046	SAI DINESH M	SUBMITTED
	25	20191PET0048	SAMEER MUHAMMED	SUBMITTED
	26	20191PET0051	SHAIK MUSTAK	SUBMITTED
	27	20191PET0053	SHRAVAN KUMAR M	SUBMITTED
	28	20191PET0059	THOTA GUNA NAGA MURARI	SUBMITTED
	29	20191PET0062	VEMULA PRASHANTH	SUBMITTED
	30	20191PET0063	YADAVALI VENKAT	SUBMITTED

Prathibha Pillai

Signature of Instructor In charge
Ms. Prathibha Pillai
Assistant Professor
Department of Petroleum Engineering

Dr. Suman Paul
Associate Professor and Head
Department of Petroleum Engineering

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GAIN MORE KNOWLEDGE
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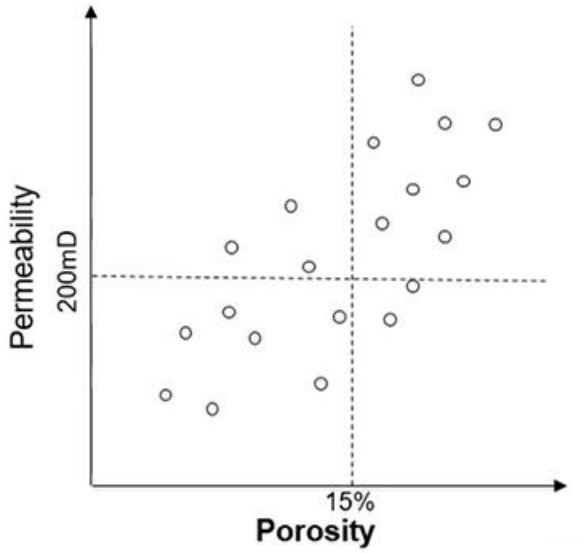
Department of Petroleum Engineering
Presidency University, Bengaluru
Itgalpur, Rajanakunte, Yelahanka, Bengaluru – 560064

Ref. No.: PU/SOE/PET/PS/2021-22/4PET1/CIR/01 Date: 12-05-2022

CIRCULAR

It is to inform all the students that then need to solve the following problem and upload in One drive on or before 17-05-2022.

Problem 1: The graph mentioned below represents the porosity and permeability data for 20 wells. There are 2 events : one represent porosity is good and is greater than 15 percent, the other event represents the reservoir with good permeability . Here in the analysis of wells , good permeability means the permeability is greater than 200md . Calculate the probability of a reservoir where permeability is good and is already known with good porosity . Also, calculate the probability of a reservoir where the reservoir is known to have poor porosity but where permeability is expected to be high.



Instructor In-charge
Mr. Utkarsh Lall
Assistant Professor
Department of Petroleum Engineering

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REPORT ON PROBLEM SOLVING

Circular Date and No.	Dtd: 12-05-2022 PU/SOE/PET/PS/2021-22/4PET1/CIR/01	**Date of Event**	17-05-2022
Type of learning	Problem Solving	**Event Type:**	Course based problem
Mode of Event:	Offline	**No. of Participant(s):**	13
Course Code/Course Name	PET 1003 Data Analytics for Oil and Gas Exploration		
Department	Department of Petroleum Engineering		
Instructor In charge	Mr Utkarsh Lall Assistant Professor, Department of Petroleum Engineering		

Event objective	1. Develop computational ability 2. Apply knowledge on Data Analytics to solve problems
Name of the topic	1. Conditional Probability Problem
Outcome of the event	i. Solve Conditional Probability Problem on Real Life Field Data
Assessment	i. Type of Assessment: Solving advanced Numerical ii. Task Assigned: Solve one problem iii. Sample Report by students
Sample student report	Attached in the ANNEXURE

Attendance sheet

Sl. No.	ID No.	Student Name	Submission status
1	20201PET0004	SHETTY RACHAN BALAKRISHNA	Submitted
2	20201PET0006	PRAVEEN B	Submitted
3	20201PET0008	NALLABHOTULA DUSHYANTH	Submitted
4	20201PET0009	KOTISHWARAN V	Submitted
5	20201PET0010	PRADEEP KUMAR RATHOD	Submitted

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	6	20201PET 0011	A M RIZWAN	Submitted
	7	20201PET 0012	MOHAMMED SHAZAN	Submitted
	8	20201PET 0015	MUJTBA AAMIR AHMED	Submitted
	9	20201PET 0016	SIDHARTH MURALI	Submitted
	10	20201PET 0017	BHOOMIKA SATISH	Submitted
	11	20201PET 0023	PRATHIVRAJ S	Submitted
	12	20201PET 0026	AJMAL AKBAR BABU	Submitted
	13	20201PET 0034	KOMMINENI HEMANTH	Submitted

Signature of Instructor In charge
Mr. Utkarsh Lall
Assistant Professor
Department of Petroleum Engineering

Dr. Suman Paul
Associate Professor and Head
Department of Petroleum Engineering

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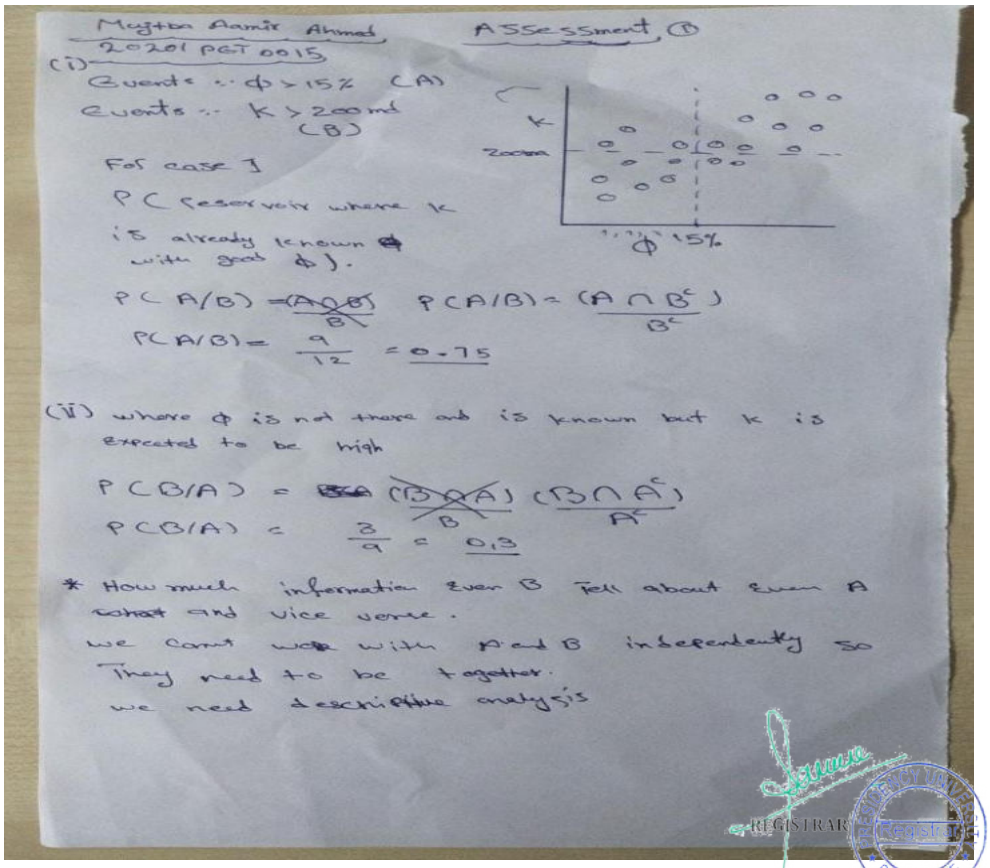
PRESIDENCY UNIVERSITY Registrar BANGALORE

GAIN MORE KNOWLEDGE
REACH GREATER HEIGHTS

Department of Petroleum Engineering
Presidency University, Bengaluru
Itgalpur, Rajanakunte, Yelahanka, Bengaluru – 560064

Course Code/Course Name	PET 1003 Data Analytics for Oil and Gas Exploration
Event Type	Problem solving
Task	Course based exercise
Instructor In charge	Mr Utkarsh Lall Assistant Professor, Department of Petroleum Engineering
Submission Date	03-06-2022
Name of the student	Mujtba Aamir Ahmed
ID number	20201PET0015

Problem statement	The graph mentioned below represents the porosity and permeability data for 20 wells. There are 2 events : one represent porosity is good and is greater than 15 percent, the other event represents the reservoir with good permeability . Here in the analysis of wells , good permeability means the permeability is greater than 200md . Calculate the probability of a reservoir where permeability is good and is already known with good porosity . Also, calculate the probability of a reservoir where the reservoir is known to have poor porosity but where permeability is expected to be high.
Student solution	

Evaluation	The evaluation was done by the students itself by exchanging their problem solutions so that they can learn about the simple calculation errors that can take place while solving the problems.

Instructor In-charge
Mr. Utkarsh Lall
Assistant Professor
Department of Petroleum Engineering

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Department of Petroleum Engineering
Presidency University, Bengaluru
Itgalpur, Rajanakunte, Yelahanka, Bengaluru – 560064

Ref. No.: PU/SOE/PET/PS/2021-22/4PET1/CIR/01 Date: 30-05-2022

CIRCULAR

It is to inform all the students that then need to solve the following problem and upload in One drive on or before 03-06-2022.

Problem 1: The deviated well has an inclination of 30 degrees in tangent section and planned mud weight is 12 ppg. Safety factor for this is 25%. Determine the parameter that provides WOB for drilling and keep the drill string from buckling. WOB desired is 50klb.

Instructor In-charge
Mr. Utkarsh Lall
Assistant Professor
Department of Petroleum Engineering

REPORT ON PROBLEM SOLVING

Circular Date and No.	Dtd: 30-05-2022 PU/SOE/PET/PS/2021-22/4PET1/CIR/01	**Date of Event**	03-06-2022
Type of learning	Problem Solving	**Event Type:**	Course based problem
Mode of Event:	Offline	**No. of Participant(s):**	25
Course Code/Course Name	PET 2003 Fundamentals of Oil and Gas Well Drilling Technology		
Department	Department of Petroleum Engineering		
Instructor In charge	Mr Utkarsh Lall Assistant Professor, Department of Petroleum Engineering		

Event objective	1. Develop numerical ability 2. Apply knowledge on Fundamentals of Drilling to solve problems
Name of the topic	1. To analyze the DC Weight to prevent buckling of DP
Outcome of the event	i. Solve Drilling Problem on Buckling of Drill Pipe
Assessment	i. Type of Assessment: Solving advanced Numerical ii. Task Assigned: Solve one problem iii. Sample Report by students
Sample student report	Attached in the ANNEXURE

Attendance sheet

Sl. No.	ID No.	Student Name	Submission status
1	20201PET0001	SOHAEL K S	Submitted
2	20201PET0004	SHETTY RACHAN BALAKRISHNA	Submitted
3	20201PET0006	PRAVEEN B	Submitted
4	20201PET0008	NALLABHOTULA DUSHYANTH	Submitted
5	20201PET0009	KOTISHWARAN V	Submitted

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6	20201PET0010	PRADEEP KUMAR RATHOD	Submitted
7	20201PET0011	A M RIZWAN	Submitted
8	20201PET0012	MOHAMMED SHAZAN	Submitted
9	20201PET0014	ZAHEED AHMED	Submitted
10	20201PET0015	MUJTBA AAMIR AHMED	Submitted
11	20201PET0016	SIDHARTH MURALI	Submitted
12	20201PET0017	BHOOMIKA SATISH	Submitted
13	20201PET0018	NUTHAN M S	Submitted
14	20201PET0019	PRANAV A.	Submitted
15	20201PET0021	R JANARDHAN REDDY	Submitted
16	20201PET0022	MOHAMMED SHADIM D K	Submitted
17	20201PET0023	PRATHIVRAJ S	Submitted
18	20201PET0026	AJMAL AKBAR BABU	Submitted
19	20201PET0029	PAVAN GOUD	Submitted
20	20201PET0030	AQIB AHMED SHARIEEF	Submitted
21	20201PET0031	BANDLA HAREESH	Submitted
22	20201PET0033	SHEKAR	Submitted
23	20201PET0034	KOMMINENI HEMANTH	Submitted

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	24	20201PET 9001	MOHAMMED SHAHID	Submitted
	25	20201PET 9002	NITIN	Submitted

Signature of Instructor In charge
Mr. Utkarsh Lall
Assistant Professor
Department of Petroleum Engineering

Dr. Suman Paul
Associate Professor and Head
Department of Petroleum Engineering

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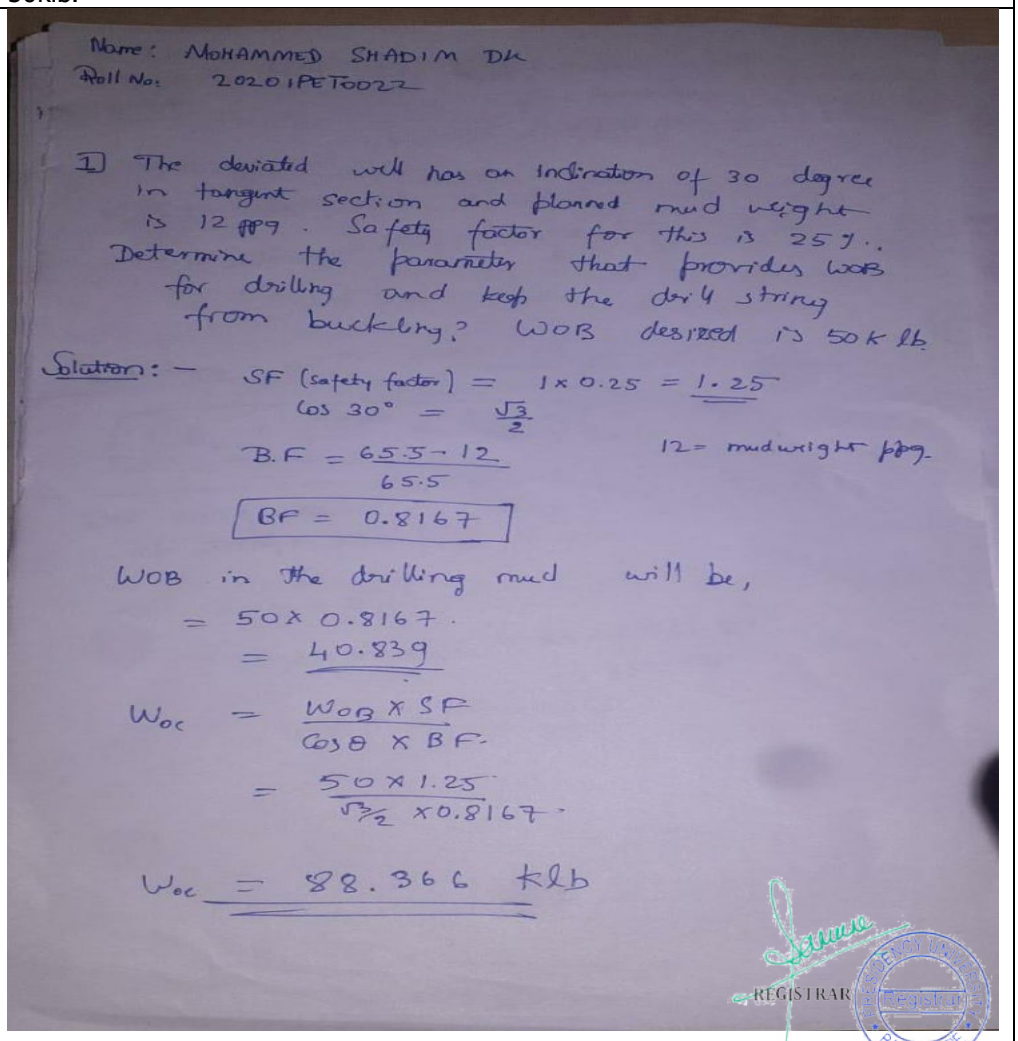
Course Code/Course Name	PET 2003 Fundamentals of Oil and Gas Well Drilling Technology
Event Type	Problem solving
Task	Course based exercise
Instructor In charge	Mr Utkarsh Lall Assistant Professor, Department of Petroleum Engineering
Submission Date	03-06-2022
Name of the student	Mohammed Shadim DK
ID number	20201PET0022

Problem statement	The deviated well has an inclination of 30 degrees in tangent section and planned mud weight is 12 ppg. Safety factor for this is 25%. Determine the parameter that provides WOB for drilling and keep the drill string from buckling. WOB desired is 50klb.
Student solution	

Evaluation	The evaluation was done by the students itself by exchanging their problem solutions so that they can learn about the simple calculation errors that can take place while solving the problems.

Instructor In-charge
Mr. Utkarsh Lall
Assistant Professor
Department of Petroleum Engineering

Course Code/Course Name	PET 2014 Geophysical methods for Oil & Gas Exploration
Event Type	Problem solving
Task	Course based exercise
Instructor In charge	Ms. Jain Mariyate Wilson Assistant Professor, Department of Petroleum Engineering
Submission Date	18-06-2022
Name of the student	Zaheed Ahmed
ID number	20201PET0014

Problem statement	**Problem 1**: A gravity reading is taken in a stationary helicopter hovering 1 km above mean sea level at a particular location. The difference in value in g measured in helicopter and at mean sea level vertically beneath the helicopter is ___ **Problem 2**: if gravity determination is made at a elevation of 150m above sea level, the BC required for density contrast of 250 kg/m3 with surroundings is _____ **Problem 3**: Two survey vessels with shipborne gravimeters are streaming at 6 knots in opposite directions along an east-west course. If the difference in gravity read by the two meters is 63.5 mgals as the ship pass, what is the latitude? **Problem 4**: A loose deposit of over consolidated clay is underlain by bedrock. Previous subsurface investigations in the area suggest that the bedrock is almost horizontal. During a seismic reflection survey, the receiver marks the arrival time of waves as 41 ms and 267 ms as a result of impact loading at 37m from the receiver. a) Determine the P-wave velocity and thickness of above clay layer. b) Later using poisons ratio of 0.3, find out S-Wave velocity

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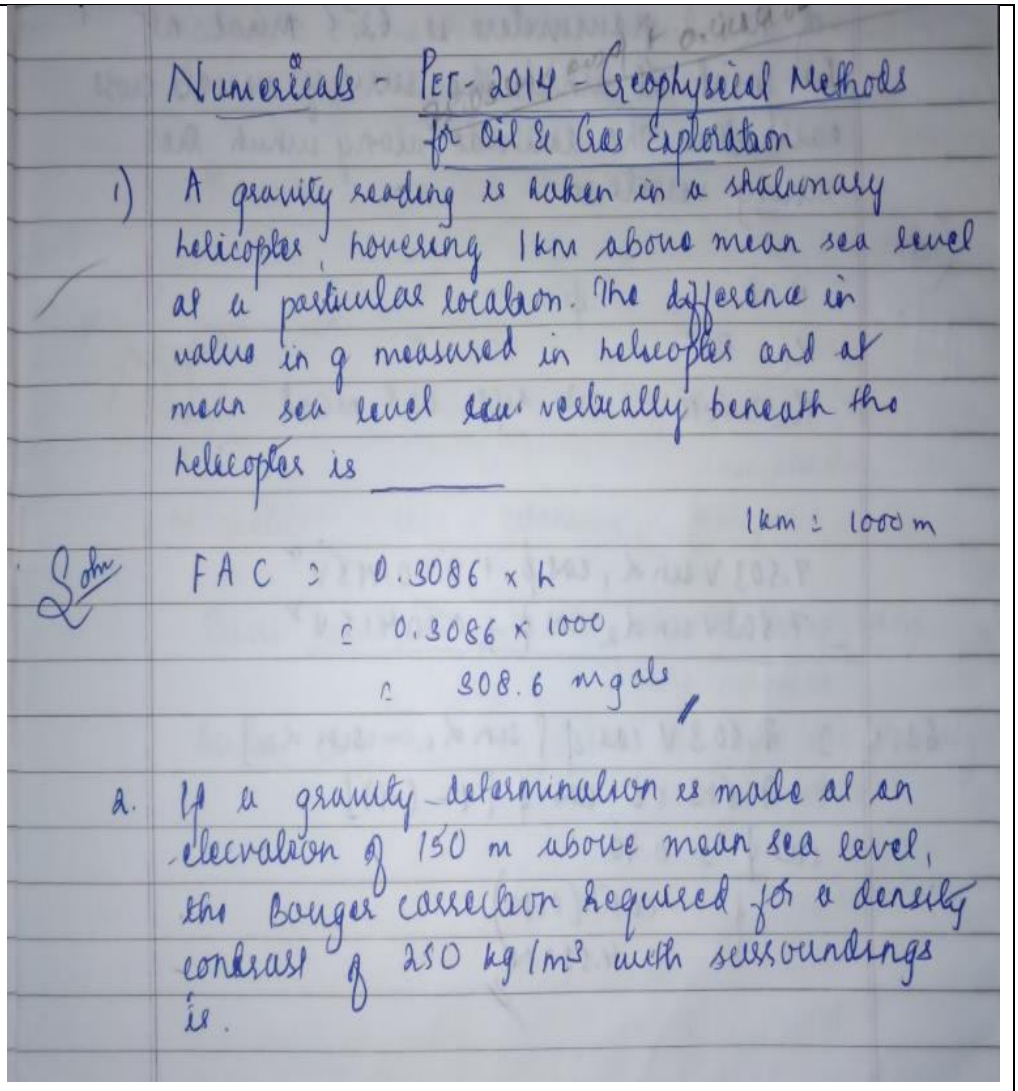
Student solution



Numericals - PET-2014 - Geophysical Methods for Oil & Gas Exploration

1) A gravity reading is taken in a stationary helicopter hovering 1km above mean sea level at a particular location. The difference in value in g measured in helicopter and at mean sea level directly vertically beneath the helicopter is ____

1km = 1000 m

FAC = 0.3086 × h
= 0.3086 × 1000
= 308.6 mgals

2. If a gravity determination is made at an elevation of 150 m above mean sea level, the Bouger correction required for a density contrast of 250 kg/m³ with surroundings is.

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Sol Bouger correction -

$h = 150$ m

$\rho = 250$ kg/m^3 $= 0.25$ g/cm^3

$= 0.04193\,h$

$= 0.04193 \times 0.25 \times 150$

$= 1.571$ mGal

2. Two survey vessels with Shapland gravimeters are cruising towards each other at a speed of 6 knots. Each along an east-west coast. The difference in gravity readings of the 2 gravimeters is 63.5 mGal. At the point at which the survey vessels cross each other. The latitude along which the survey vessels is

Sol

$N = 6$ $\phi =$

$\alpha_1 = 90°$

$\alpha_2 = 270°$ & diff 63.5 mGal

$7.503\,V \sin\alpha_1 \cos\phi + 0.00415\,V^2$

$- 7.503\,V \sin\alpha_2 \cos\phi + 0.00415\,V^2$

$63.5 = 7.503\,V \cos\phi [\sin\alpha_1 - \sin\alpha_2]$

$= 7.503 \times 6 \cos\phi [1 - (-1)]$

$\cos\phi = 0.70$

$\phi = \cos^{-1}(0.70)$

$= 45.55°$ N

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	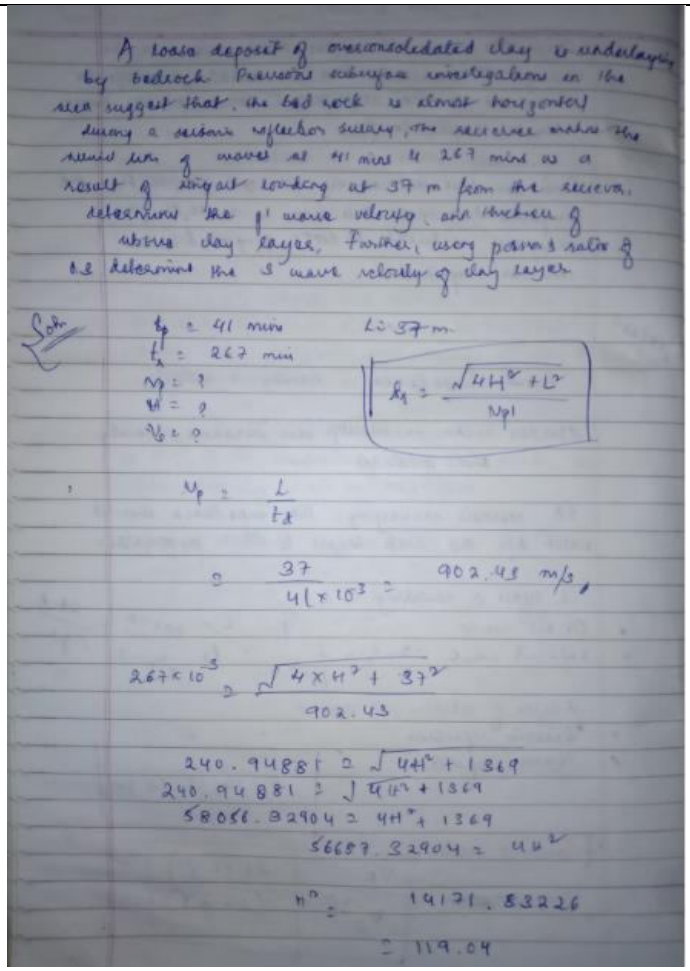
Evaluation	Correct solution

Instructor In-charge
Ms. Jain Mariyate Wilson
Assistant Professor
Department of Petroleum Engineering

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GAIN MORE KNOWLEDGE
REACH GREATER HEIGHTS

Department of Petroleum Engineering
Presidency University, Bengaluru
Itgalpur, Rajanakunte, Yelahanka, Bengaluru – 560064

Ref. No.: PU/SOE/PET/PS/2021-22/4PET1/CIR/01 Date: 14-06-2022

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It is to inform all the students that then need to solve the following numericals and upload in One drive on or before 17-06-2022.

Problem 1: A gravity reading is taken in a stationary helicopter hovering 1 km above mean sea level at a particular location. The difference in value in g measured in helicopter and at mean sea level vertically beneath the helicopter is ___

Problem 2: if gravity determination is made at a elevation of 150m above sea level, the BC required for density contrast of 250 kg/m3 with surroundings is _____

Problem 3: Two survey vessels with shipborne gravimeters are streaming at 6 knots in opposite directions along an east-west course. If the difference in gravity read by the two meters is 63.5 mgals as the ship pass, what is the latitude?

Problem 4: A loose deposit of over consolidated clay is underlain by bedrock. Previous subsurface investigations in the area suggest that the bedrock is almost horizontal. During a seismic reflection survey, the receiver marks the arrival time of waves as 41 ms and 267 ms as a result of impact loading at 37m from the receiver.

a) Determine the P-wave velocity and thickness of above clay layer.

b) Later using poisons ratio of 0.3, find out S-Wave velocity

Instructor In-charge
Ms. Jain Mariyate Wilson
Assistant Professor
Department of Petroleum Engineering

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REPORT ON PROBLEM SOLVING

Circular Date and No.	Dtd: 20-05-2022 PU/SOE/PET/PS/2021-22/4PET1/CIR/01	**Date of Event**	17-06-2022
Type of learning	Problem Solving	**Event Type:**	Course based problem
Mode of Event:	Offline	**No. of Participant(s):**	12
Course Code/Course Name	PET 2014 GEOPHYSICAL METHODS FOR OIL & GAS EXPLORATION		
Department	Department of Petroleum Engineering		
Instructor In charge	MS. Jain Mariyate Wilson Assistant Professor, Department of Petroleum Engineering		

Event objective	1. Develop computational ability
Name of the topic	1. Gravity Surveying, 2. Seismic Surveying
Outcome of the event	1. Problem solving places the focus on the student making sense of mathematical ideas 2. And it basically encourages the students to believe in their ability to think mathematically.
Assessment	i. Type of Assessment: solve the numerical with suitable parameters ii. Task Assigned: Analyze the problem and solve iii. Sample Report by students
Sample student report	Attached in the ANNEXURE

Attendance sheet

Sl. No.	ID No.	Student Name	Submission status
1	20201PET0001	SOHAEL K S	Submitted
2	20201PET0014	ZAHEED AHMED	Submitted
3	20201PET0018	NUTHAN M S	Submitted
4	20201PET0019	PRANAV. A	Submitted
5	20201PET0021	R JANARDHAN REDDY	Submitted
6	20201PET0022	MOHAMMED SHADIM D K	Submitted

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	7	20201PET 0029	PAVAN GOUD	Submitted	
	8	20201PET 0030	AQIB AHMED SHARIEEF	Submitted	
	9	20201PET 0031	BANDLA HAREESH	Submitted	
	10	20201PET 0033	SHEKAR	Submitted	
	11	20201PET 9001	MOHAMMED SHAHID	Submitted	
	12	20201PET 9002	NITIN	Submitted	

Signature of Instructor In charge
Ms. Jain Mariyate Wilson
Assistant Professor
Department of Petroleum Engineering

Dr. Suman Paul
Associate Professor and Head
Department of Petroleum Engineering

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Course Code/Course Name	PET 2029 Quality Management Practices in Oil & Gas Industry
Event Type	Problem solving
Task	Course based exercise
Instructor In charge	Ms. Jain Mariyate Wilson Assistant Professor, Department of Petroleum Engineering
Submission Date	18-06-2022
Name of the student	Mohammed Shezan
ID number	20201PET0012

Problem statement	Problem 1: Reservoir management might also be thought of as the decision-making process that matches the plan to the reservoir at hand and to the business and technological context under which the operator manages the reservoir. The range of possible plans is wide, and building the optimum reservoir management plan depends on the operator's knowledge. As per the reference paper data provided, explain how the reservoir optimization of East Randolph Field, Eastern OH is done. Also, explain the factors that heavily influenced the development of reservoir management plan for East Randolph field.
Student solution	**PET:2029 Quality Management Practices** **Case Study on Reservoir Management** What is reservoir management? What is its importance? Reservoir management is different things to different people, but it is the way an operator chooses to manage assets, Thakur defined reservoir management as the "judicious use of available resources to maximize economic recovery." Other definitions, such as that offered by Wiggins and Startzman,3 view reservoir management as an "application of state-of-the-art technology to a known reservoir system within a given management environment." Reservoir management might also be thought of as the decision-making process that matches the plan to the reservoir at hand and to the business and technological context under which the operator manages the reservoir. The range of plans is wide, and building the optimum reservoir management plan depends on the operator's knowledge of -The reservoir and its facilities. -The availability and use of both common and state of the art technologies. -The general business environment. -The company's business context and attitudes. The reservoir management plan itself may specify a condition or set of conditions that indicate when the plan should be reevaluated. These criteria may include such items as cumulative volume, relative volume, or rate of production or injection of a specified fluid, passage of a stated period, or reaching a certain stage of reservoir development. What are various management techniques that have been included or implemented in future for reservoir optimization? **East Randolph Field, Eastern OH.** Since 1992, PEP Drilling Company and Belden and Blake Corporation have developed this unique but significant oil reservoir in the Cambrian Rose Run formation in Portage County, OH. One of few fields producing oil from the Rose Run, the East Randolph field covers about 1,500 acres, lies at a depth of about 7,200 R, and contains an average of 15 ft of pay in the upper three of five marginal marine sand zones typically present. The field contains just over 30 wells and had produced about 450,000 bbl. of 42° API oil and 1.2 Bcfg as of June 1996. Two factors heavily influenced the development of the reservoir management plan for East Randolph field: The field has been and continues to be developed by small independent operators. The proposed strategy included identifying optimum development and infill well locations, evaluating viable improved recovery process options, and defining related operational and facility requirements. Additional strategies addressed problems with field operations, such as paraffin buildup, hydraulic fracture stimulation, pumping system optimization, and production treatment requirements. REGISTRAR PRESIDENCY UNIVERSITY Registrar BANGALORE

	How Reservoir Characterization? Reservoir characterization played a significant role in arriving at the reservoir management plan, particularly in selecting the highest priority targets, i.e., defining development and infill well locations and selecting an optimum secondary recovery method. The team performed a series of incremental and sometimes iterative steps to analyze existing data, identify data insentiences, obtain, and incorporate latest information into the emerging model, and test the predictive limits of the model before arriving at the final reservoir characterization model. The operator gained a better estimate of the resources contained in the East Randolph reservoir because of this research. OOIP is now thought to be at least twice as high as before. Estimate prior to the start of the project This revelation will have a significant impact on everyone. Field development and recovery initiatives in the future, What the operator discovered about the company's internal structure layering, fluid distribution, and other aspects of the reservoir. The ability to continue development through expansion and infill drilling, as well as into the secondary recovery phase, will be aided by the presence of faults and fractures.
Evaluation	Correct solution

Instructor In-charge
Ms. Jain Mariyate Wilson
Assistant Professor
Department of Petroleum Engineering

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GAIN MORE KNOWLEDGE
REACH GREATER HEIGHTS

Department of Petroleum Engineering
Presidency University, Bengaluru
Itgalpur, Rajanakunte, Yelahanka, Bengaluru – 560064

Ref. No.: PU/SOE/PET/PS/2021-22/4PET1/CIR/01 Date: 14-06-2022

CIRCULAR

It is to inform all the students that then need to solve the following case study and upload in One drive on or before 14-06-2022.

Problem 1: Reservoir management might also be thought of as the decision-making process that matches the plan to the reservoir at hand and to the business and technological context under which the operator manages the reservoir. The range of possible plans is wide, and building the optimum reservoir management plan depends on the operator's knowledge. As per the reference paper data provided, explain how the reservoir optimization of East Randolph Field, Eastern OH is done. Also, explain the factors that heavily influenced the development of reservoir management plan for East Randolph field.

Instructor In-charge
Ms. Jain Mariyate Wilson
Assistant Professor
Department of Petroleum Engineering

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REPORT ON PROBLEM SOLVING

Circular Date and No.	Dtd: 20-05-2022 PU/SOE/PET/PS/2021-22/4PET1/CIR/01	**Date of Event**	14-06-2022
Type of learning	Problem Solving	**Event Type:**	Course based problem
Mode of Event:	Offline	**No. of Participant(s):**	12
Course Code/Course Name	PET 2029 QUALITY MANAGEMENT PRACTICES IN OIL & GAS INDUSTRY		
Department	Department of Petroleum Engineering		
Instructor In charge	MS. Jain Mariyate Wilson Assistant Professor, Department of Petroleum Engineering		

Event objective	1. Develop computational ability 2. Apply knowledge on reservoir management for field optimization
Name of the topic	1. Reservoir Management for field optimization
Outcome of the event	i. It facilitates the exploration of a real issue within a defined context, using a variety of data sources
Assessment	i. Type of Assessment: solve the case study with suitable parameters ii. Task Assigned: Analyze the problem and solve iii. Sample Report by students
Sample student report	Attached in the ANNEXURE

Attendance sheet

Sl. No.	ID No.	Student Name	Submission status
1	20201PET0001	SOHAEL K S	Submitted
2	20201PET0006	PRAVEEN B	Submitted
3	20201PET0009	KOTISHWARAN V	Submitted
4	20201PET0011	A M RIZWAN	Submitted
5	20201PET0012	MOHAMMED SHAZAN	Submitted
6	20201PET0018	NUTHAN M S	Submitted
7	20201PET0021	R JANARDHAN REDDY	Submitted

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	8	20201PET 0029	PAVAN GOUD	Submitted
	9	20201PET 0030	AQIB AHMED SHARIEEF	Submitted
	10	20201PET 0033	SHEKAR	Submitted
	11	20201PET 9001	MOHAMMED SHAHID	Submitted
	12	20201PET 9002	NITIN	Submitted

Signature of Instructor In charge
Ms. Jain Mariyate Wilson
Assistant Professor
Department of Petroleum Engineering

Dr. Suman Paul
Associate Professor and Head
Department of Petroleum Engineering

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REPORT ON PROBLEM SOLVING

Circular Date and No.	Dtd: 20-05-2022 PU/SOE/PET/PS/2021-22/2PET1/CIR/01	**Date of Event**	03-06-2022
Type of learning	Problem Solving	**Event Type:**	Course based problem
Mode of Event:	Offline	**No. of Participant(s):**	26
Course Code/Course Name	PET 2001 DRILLING FLUID TECHNOLOGY		
Department	Department of Petroleum Engineering		
Instructor In charge	Mr Bhairab Jyoti Gogoi Assistant Professor, Department of Petroleum Engineering		

Event objective	1. Develop computational ability 2. Apply knowledge on Drilling fluid technology to solve problems
Name of the topic	1. Mud weight increase calculation 2. Mud weight decrease calculation
Outcome of the event	i. Solve GATE MCQ on Drill Fluid
Assessment	i. Type of Assessment: Solving advanced Numerical ii. Task Assigned: Solve two problem iii. Sample Report by students
Sample student report	Attached in the ANNEXURE

Attendance sheet

Sl. No.	ID No.	Student Name	Submission status
1	20211PET 0001	MOHAMED SAADULLAH S	Submitted
2	20211PET 0002	ROSHAN T	Submitted
3	20211PET 0003	SYED LUQMAN J	Submitted
4	20211PET 0004	BELIM MOH SAAD MOHAMMEDBHAI	Submitted
5	20211PET 0005	MOHAMMAD SUHAIL	Submitted
6	20211PET 0006	FAHAD ALI KHAN	Submitted
7	20211PET 0008	VANKALA JAI SPHOORTHI	Submitted

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	8	20211PET0009	AFEEZ	Submitted	
	9	20211PET0010	HITHESH T	Submitted	
	10	20211PET0011	GANUGA ROSHAN	Submitted	
	11	20211PET0012	MOHAMED NAIF NIHAD ALI	Submitted	
	12	20211PET0013	DEEPAK JADHAV	Submitted	
	13	20211PET0014	DARSHAN D P	Submitted	
	14	20211PET0015	MOHAMMAD YASIR BYAKOD	Submitted	
	15	20211PET0016	ASMA THASNIM	Submitted	
	16	20211PET0017	IBRAHIM NAWAZ M	Submitted	
	17	20211PET0018	SANDEEP IYAGAR	Submitted	
	18	20211PET0019	KIRAN EKIRAN	Submitted	
	19	20211PET0020	YASHWANTH GOWDA M	Submitted	
	20	20211PET0021	MAYUR P	Submitted	
	21	20211PET0022	YASHWANTH S	Submitted	
	22	20211PET0023	MOHAMMED SHABAZ KHALANDER D	Submitted	
	23	20211PET0024	BOLLAMA REDDY HIMAVENKATA MANKANTHA	Submitted	
	24	20211PET0025	FAZIL SHAREEF H A	Submitted	
	25	20211PET0026	PATEL MOHAMMED ADNAN MOHAMMED GOUS	Submitted	
	26	20211PET0027	SYED USMAN	Submitted	

Signature of Instructor In charge
Mr. Bhairab Jyoti Gogoi
Assistant Professor
Department of Petroleum Engineering

Dr. Suman Paul
Associate Professor and Head
Department of Petroleum Engineering

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Ref. No.: PU/SOE/PET/PS/2021-22/2PET1/CIR/01 Date: 20-05-2022

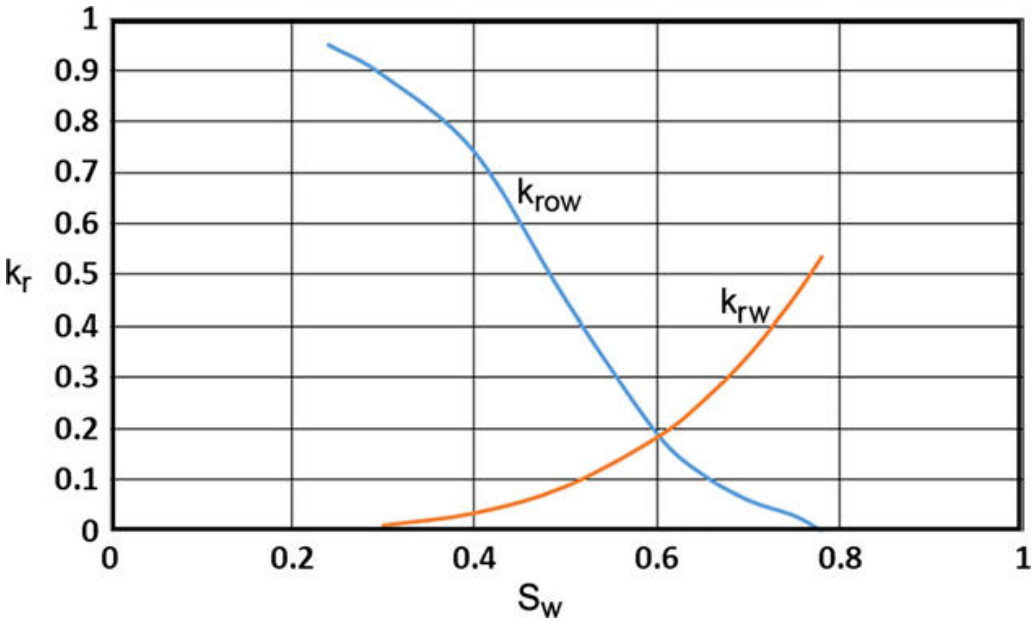
CIRCULAR

It is to inform all the students that then need to solve the following problems and upload in One drive on or before 16-06-2022.

Problem 1: Give an account of the fractional flow of water using the below given relative permeability curve for a linear reservoir system. Following properties are given for the reservoir system.

Dip angle = 0
Viscosity of water (μ_w) = 0.5 cP
Density of oil (ρ_o) = 45 lb/ft^3
Absolute Permeability = 50 mD
Oil formation volume factor (B_O) = 1.2 bbl/STB
Density of water (ρ_w) = 64 lb/ft^3
Water formation volume factor (B_w) = 1.05 bbl/STB

Perform the calculations for the following values of oil viscosity: μo = 0.5, 1 and 10 cP respectively. Use the below relative permeability graph to plot the fractional flow curves corresponding to different viscosities? Use normal graph paper for plotting.



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Instructor In-charge
Dr. Rohit Sharma
Assistant Professor
Department of Petroleum Engineering

REPORT ON PROBLEM SOLVING

Circular Date and No.	Dtd: 20-05-2022 PU/SOE/PET/PS/2021-22/6PET1/CIR/01	**Date of Event**	15-06-2022
Type of learning	Problem Solving	**Event Type:**	Course based problem
Mode of Event:	Offline	**No. of Participant(s):**	62
Course Code/Course Name	PET225 Advanced Reservoir Engineering and Management		
Department	Department of Petroleum Engineering		
Instructor In charge	Dr. Rohit Sharma Assistant Professor, Department of Petroleum Engineering		

Event objective	1. Develop computational ability 2. Apply knowledge of Reservoir Engineering to solve industrial problems
Name of the topic	1. Fractional flow of water
Outcome of the event	i. Gain experience of reservoir engineering calculations used in oilfields and commercial reservoir engineering softwares.
Assessment	i. Type of Assessment: Solving advanced numerical problems ii. Task Assigned: Solve one numerical with graph plotting iii. Sample Report by students
Sample student report	Attached in the ANNEXURE

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Attendance sheet

Sl.No	ID No.	Student Name	Submission status
1.	20191PET0002	AKASH S	Submitted
2.	20191PET0003	AMAN TAHASILDAR	Submitted
3.	20191PET0004	ASHWIN RAJ R	Submitted
4.	20191PET0005	ASWIN K S	Submitted
5.	20191PET0008	BIRAJDAR SAURABH SURYAKANT	Submitted
6.	20191PET0012	FEROZ AHMED KHUDAVAND	Submitted
7.	20191PET0013	FIROZA SHEIKH	Submitted
8.	20191PET0014	GANESH KUMAR POTHAN	Submitted
9.	20191PET0015	GILAKA PAVAN	Submitted
10.	20191PET0016	HARI GOVIND V	Submitted
11.	20191PET0017	HITHESH P V	Submitted
12.	20191PET0018	JESWIN JAVAD	Submitted
13.	20191PET0019	KADIRI LALITHA	Submitted
14.	20191PET0020	KOKEERAN P	Submitted
15.	20191PET0021	KRITIKA	Submitted
16.	20191PET0022	KUSHAL K	Submitted
17.	20191PET0023	M MOHAMED ALFIATH	Submitted
18.	20191PET0024	MIDHUN M M	Submitted
19.	20191PET0025	MIDHUN SUBHASH	Submitted
20.	20191PET0026	MOHAMED MUNAWAR HUSSAIN M	Submitted
21.	20191PET0027	MOHAMED SUHAIL	Submitted
22.	20191PET0028	MOHAMMED ADNAN	Submitted
23.	20191PET0029	MOHAMMED AFZAL	Submitted
24.	20191PET0030	MOHAMMED ISHAQ	Submitted
25.	20191PET0032	MOHAMMED MUZAMMIL PATVEGAR	Submitted
26.	20191PET0033	MOHAMMED REEHAN AZHAR	Submitted
27.	20191PET0034	MOHAMMED TAHA NAJEEB BASHA	Submitted
28.	20191PET0035	MOAHMMED UZMAIR M	Submitted
29.	20191PET0036	MOHAMMED ZAIN Y C	Submitted
30.	20191PET0037	MOHD ZUBAIR	Submitted
31.	20191PET0038	MOIDEEN ANSAF	Submitted
32.	20191PET0039	NABEED MUNNNA	Submitted

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	33.	20191PET0040	NAGAM VENKATA MAHARSHI VASISTA	Submitted
	34.	20191PET0041	P SUHAIL AHMED	Submitted
	35.	20191PET0042	PRASHANTH R	Submitted
	36.	20191PET0043	RISHU SINGH	Submitted
	37.	20191PET0044	RIZVI ABUSAMAMA TAHQIQHUSAIN	Submitted
	38.	20191PET0046	SAI DINESH	Submitted
	39.	20191PET0048	SAMEER MUHAMMED	Submitted
	40.	20191PET0049	SANAMPUDI VENKATA RAMI REDDY	Submitted
	41.	20191PET0051	SHAIK MUSTAK	Submitted
	42.	20191PET0052	SHAIKH ADNAN ZAKIRHUSAIN	Submitted
	43.	20191PET0053	SHRAVAN KUMAR M	Submitted
	44.	20191PET0054	SYED IKHLAS	Submitted
	45.	20191PET0055	TANIYA KG	Submitted
	46.	20191PET0056	TARUN KUMAR A	Submitted
	47.	20191PET0057	TAUSEEF NAZIR	Submitted
	48.	20191PET0058	TAUSIF AHMED	Submitted
	49.	20191PET0059	THOTA GUNA NAGA MURARI	Submitted
	50.	20191PET0060	THUFAIL MAJEED A M	Submitted
	51.	20191PET0061	UPPARAPALLY DIVAKAR REDDY	Submitted
	52.	20191PET0062	VEMULA PRASHANTH	Submitted
	53.	20191PET0063	YADAVALI VENKAT	Submitted
	54.	20191PET0067	SHAIK MUJEEB UR REHAMAN	Submitted
	55.	20191PET0068	RIZWAN	Submitted
	56.	20191PET9002	PILLI KALYAN KUMAR	Submitted
	57.	20191PET9004	ANSTIN SUNNY	Submitted
	58.	20191PET9006	SHABEER AHMED	Submitted
	59.	20191PET9007	JAFFAR SADIQ M R	Submitted
	60.	20201LPE0001	MALIPEDDU SAI PRANAV .	Submitted
	61.	20201LPE0002	SYED SADIQ PASHA K	Submitted
	62.	20201LPE0003	SHIVAKUMAR PATIL	Submitted

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Signature of Instructor In charge
Dr. Rohit Sharma
Assistant Professor
Department of Petroleum Engineering

Dr. Suman Paul
Associate Professor and Head
Department of Petroleum Engineering

Course Code/Course Name	PET 225 /Advanced Reservoir Engineering and Management
Event Type	Problem Solving
Task	Course Based Exercise
Instructor in-Charge	Dr. Rohit Sharma Assistant Professor, Department of Petroleum Engineering
Submission Date	16-06-2022
Event Photos	

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<table>
<tr><td></td><td> 
</td></tr>
<tr><td>Name of Student</td><td>Jeswin Javad</td></tr>
<tr><td>ID number</td><td>2019PET0018</td></tr>
<tr><td>Problem Statement</td><td>Give an account of the fractional flow using the below given relative permeability curve for a linear reservoir system. Following properties are given for the reservoir system.
Dip angle = 0 Viscosity of water (μ_w) = 0.5 cP
Density of oil (ρ_o) = 45 lb/ft^3 Absolute Permeability = 50 mD
Oil formation volume factor (B_O) = 1.2 bbl/STB Density of water (ρ_w) = 64 lb/ft^3
Water formation volume factor (B_w) = 1.05 bbl/STB

Perform the calculations for the following values of oil viscosity: μo = 0.5, 1 and 10 cP respectively. Use the below relative permeability graph to plot the fractional flow curves corresponding to different viscosities? Use normal graph paper for plotting.</td></tr>
</table>

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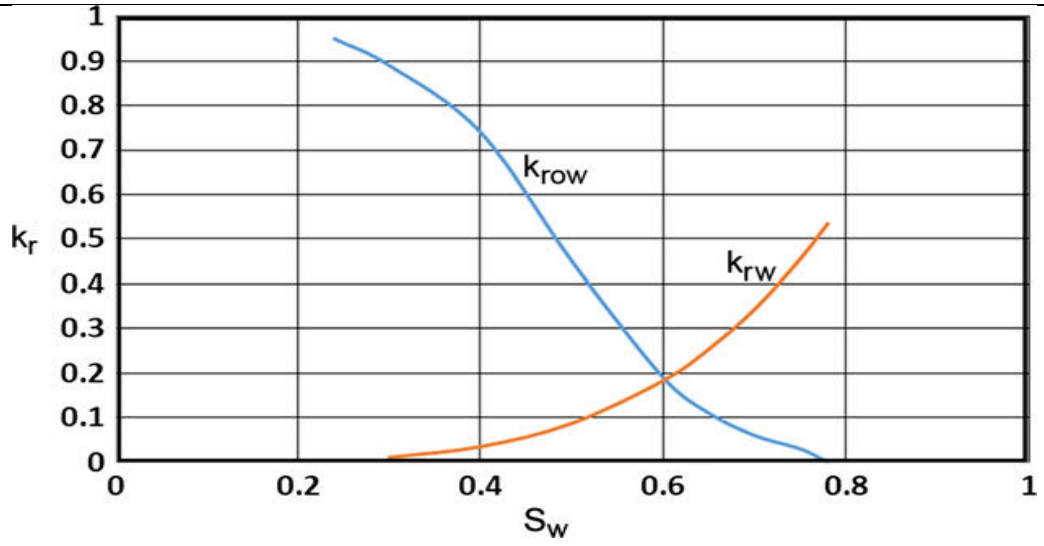

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Student Solution

AREN ASSIGNMENT-1

NUMERICAL

Jeswin Jesan
20191PET0018

Solution

Step 1 : Calculate the density difference $(\rho_w - \rho_o)$ in g/cm³

$(\rho_w - \rho_o) = (64 - 45)\,162.4 = 0.3084$ g/cm³

Step 2 : simplify equation by using the given data

$$f_w = \frac{1 - \left(\frac{(0.001127\,(k k_{ro})\,A)}{\mu_o\, w}\right)\left[0.433\,(S_w - S_o)\,\sin(\alpha)\right]}{1 + \frac{k_{ro}}{k_{rw}}\frac{\mu_w}{\mu_o}}$$

$$f_w = \frac{1 - 0.00127\,(50 k_{ro})(28000)\,[0.433\,(0.904)\sin(\alpha)]}{1\,(1000)}$$

$$1 + \left(\frac{0.5}{1}\right)\left(\frac{k_{ro}}{k_{rw}}\right)$$

$$f_w = \frac{1 - 0.185\,k_{ro}\,[\sin(\alpha)]}{1 + 0.5\,(k_{ro}/k_{rw})}$$

→ injection well located down dip (updip displacement) $\sin(\alpha)$ is positive, therefore.

$$f_w = \frac{1 - 0.185\,k_{ro}\,\sin(\alpha)}{1 + 0.5\left(\frac{k_{ro}}{k_{rw}}\right)}$$

→ injection well located updip (downdip displacement) $\sin(\alpha)$ is negative, therefore

$$f_w = \frac{1 - 0.185\,k_{ro}\,\sin(\alpha)}{1 + 0.5\left(\frac{k_{ro}}{k_{rw}}\right)}$$

Step 3 : perform the fractional flow calculation in the following tabular column

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S_w	k_{ro}	k_{ro}/k_{wo}	f_w updip displacement 10°	20°	30°	f_w Downdip displacement 10°	20°	30°
0.24	0.95	0	0	0	0	0	0	0
0.30	0.89	89	0.021	0.021	0.020	0.028	0.023	0.024
0.40	0.74	18.5	0.095	0.093	0.091	0.100	0.102	0.104
0.50	0.45	5.0	0.289	0.278	0.274	0.290	0.294	0.298
0.60	0.19	1.12	0.631	0.633	0.630	0.645	0.649	0.652
0.66	0.12	0.43	0.820	0.817	0.814	0.826	0.830	0.832
0.70	0.06	0.27	0.879	0.878	0.876	0.883	0.884	0.886
0.75	0.03	0.09	0.961	0.960	0.959	0.962	0.963	0.964
0.78	0.00	0	1.000	1.000	1.000	1.000	1.000	1.000

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	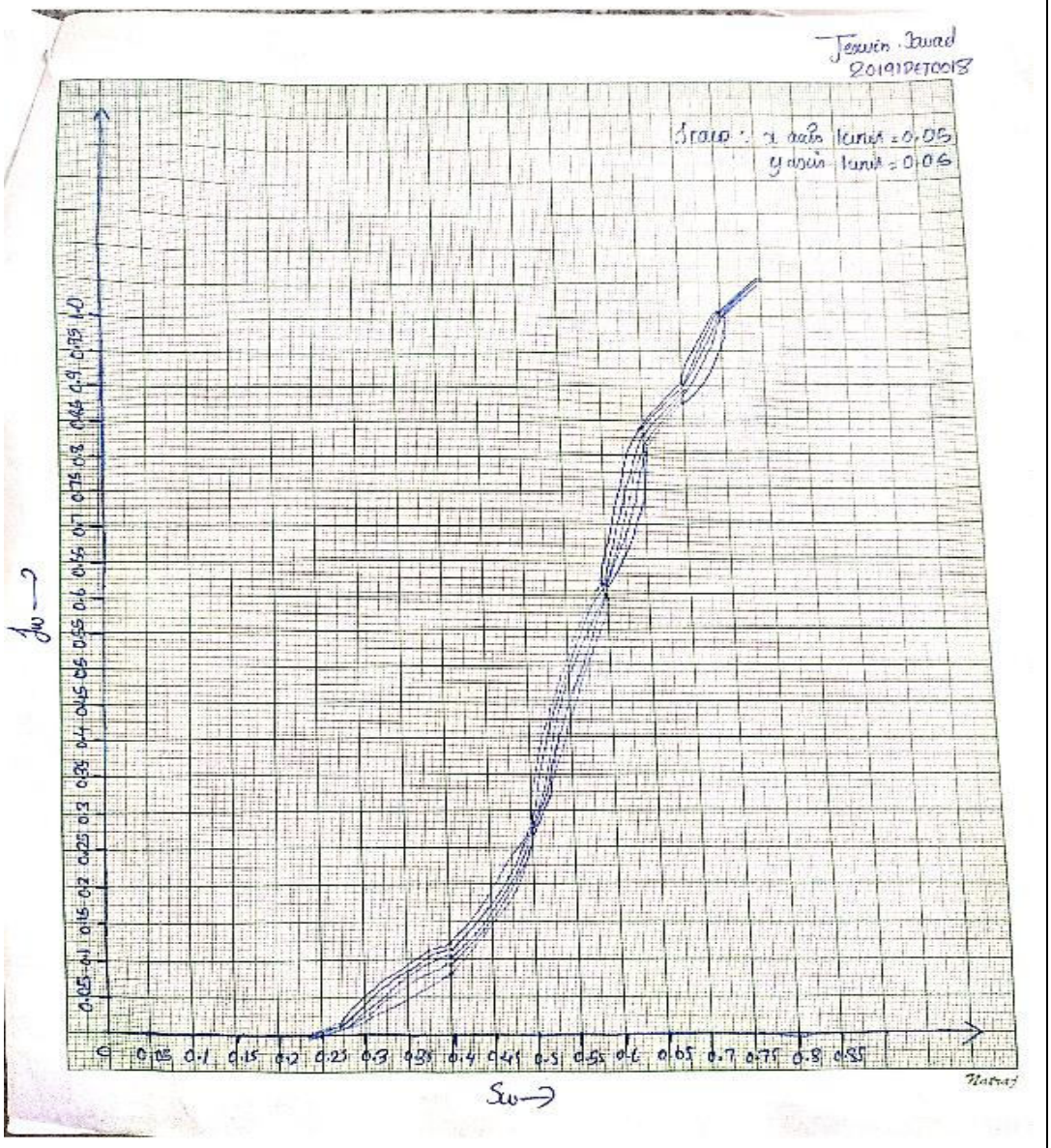
Evaluation	**Solution is correct**

Rohit Sh

Instructor In-charge
Dr. Rohit Sharma,
Assistant Professor,
Department of Petroleum Engineering, Presidency University

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Ref. No.: PU/SOE/PET/PS/2021-22/6PET1/CIR/01 Date: 10-05-2022

CIRCULAR

It is to inform all the students that then need to solve the following problem and upload in One drive on or before 19-05-2022.

Problem 1:

1. Using CMG Builder and STARS, simulate a production well with the following inputs and answer the question:

Name- IDNo.dat

Simulator- STARS

Working Units- SI

Porosity- Single Porosity

Simulation Start Date - 1/1/2005

Pattern - Normal 5 spot

Pattern Area - 10 acres

Thickness of Reservoir- 30m

Top of Reservoir - 500m

Dip Angle - 0 degrees

Approximate block thickness - 4m

Approximate block size - 6

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Porosity - 0.3

Permeability - I=J= 400, K=40

PVT to be imported - Black Oil

Temperature- 37.7778 degree Celsius

Max Pressure - 12000 kPa

Bubble Point Pressure - 8576 kPa

Stock Tank Oil Gravity(API) -21

Gas Gravity - 0.65

Match the viscosity of Oil with reference to bubble point pressure as 120 cp

In generate water properties using correlations take reference pressure - 8576 kPa

Set Value - Bubble Point Pressure

Temperature (degree Celsius)	Oil Viscosity (cp)
37	420
50	340
70	250

SWCON - 0.3

SWCRIT - 0.3

SOIRW - 0

SORW - 0.4

SOIRG - 0.0

SORG - 0.45

SGCON - 0

SGCRIT - 0.05

KROCW - 1

KRWIRD - 1

KRGCL - 0.3

KROGCG - ---

All other exponents - 2

Initial Conditions -

Pressure Correction - Phase

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Reference Pressure - 8576 kPa

Reference depth - 504m

WOC - 526

GOC - -4

First time step after well change (DTwell) - 0.001

In all injectors in well and recurrent, the top 3 perforations are to be removed. In producer, remove the bottom 2 perforations.

Constraints for Injector 1:

OPERATE at BHP 12000kPa

OPERATE at STW 250m^3/day

For the injected fluid:

Temperature - 325

Steam Quality - 0.8

Mole fraction of Water -1

Copy all the events of injector 1 to other 3 injectors along with the dates.

Constraints for Producer:

OPERATE at BHP 200kPa

OPERATE at STL 100m^3/day

Calculate:

1) Oil phase volume(m^3),

2) Gross formation volume (m^3),

3) Draw the rough graphs of Oil Rate at Standard Conditions and Water Cut at Standard Conditions.

Instructor In-charge
Mr. Utkarsh Lall
Assistant Professor
Department of Petroleum Engineering

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REPORT ON PROBLEM SOLVING

Circular Date and No.	Dtd: 10-05-2022 PU/SOE/PET/PS/2021-22/6PET1/CIR/01	**Date of Event**	19-05-2022
Type of learning	Problem Solving	**Event Type:**	Case Study
Mode of Event:	Offline	**No. of Participant(s):**	37
Course Code/Course Name	PET 258 Reservoir Simulation and Modeling Lab		
Department	Department of Petroleum Engineering		
Instructor In charge	Mr Utkarsh Lall Assistant Professor, Department of Petroleum Engineering		

Event objective	1. Develop computational and problem visualization ability 2. Apply knowledge of Reservoir Engineering to solve problems in CMG
Name of the topic	1. To solve a case study on CMG STARS on Thermal Flooding using 5 spot pattern
Outcome of the event	i. Solve Reservoir Simulation Problem on CMG STARS
Assessment	i. Type of Assessment: Developing model in CMG and performing advanced simulation ii. Task Assigned: Solve one problem iii. Sample Report by students
Sample student report	Attached in the ANNEXURE

Attendance sheet

Sl. No.	ID No.	Student Name	Submission status
1	20191PET0013	FIROZA SHEIKH	Submitted
2	20191PET0019	KADIRI LALITHA	Submitted
3	20191PET0022	KUSHAL K	Submitted
4	20191PET0032	MOHAMMED MUZAMMIL PATVEGAR	Submitted
5	20191PET0034	MOHAMMED TAHA NAJEEB BASHA	Submitted

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6	20191PET0035	MOHAMMED UZMAIR M	Submitted
7	20191PET0036	MOHAMMED ZAIN Y C	Submitted
8	20191PET0037	MOHD ZUBAIR	Submitted
9	20191PET0038	MOIDEEN ANSAF	Submitted
10	20191PET0039	NABEED MUNNNA	Submitted
11	20191PET0040	NAGAM VENKATA MAHARSHI VASISTA	Submitted
12	20191PET0041	P SUHAIL AHMED	Submitted
13	20191PET0042	PRASHANTH R	Submitted
14	20191PET0043	RISHU SINGH	Submitted
15	20191PET0044	RIZVI ABUSAMAMA TAHQIQHUSAIN	Submitted
16	20191PET0046	SAI DINESH M	Submitted
17	20191PET0048	SAMEER MUHAMMED	Submitted
18	20191PET0049	SANAMPUDI VENKATA RAMI REDDY	Submitted
19	20191PET0051	SHAIK MUSTAK	Submitted
20	20191PET0052	SHAIKH ADNAN ZAKIRHUSAIN	Submitted
21	20191PET0053	SHRAVAN KUMAR M	Submitted
22	20191PET0054	SYED IKHLAS	Submitted

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	23	20191PET 0055	TANIYA K G	Submitted
	24	20191PET 0056	TARUN KUMAR A	Submitted
	25	20191PET 0057	TAUSEEF NAZIR	Submitted
	26	20191PET 0058	TAUSIF AHMED	Submitted
	27	20191PET 0059	THOTA GUNA NAGA MURARI	Submitted
	28	20191PET 0060	THUFAIL MAJEED A MA M	Submitted
	29	20191PET 0061	UPPARAPALLY DIVAKAR REDDY	Submitted
	30	20191PET 0062	VEMULA PRASHANTH	Submitted
	31	20191PET 0063	YADAVALI VENKAT	Submitted
	32	20191PET 0064	MUHAMMED SAFAL S	Submitted
	33	20191PET 0067	SHAIK MUJEEB UR REHAMAN	Submitted
	34	20191PET 0068	RIZWAN RIZWAN	Submitted
	35	20191PET 9004	ANSTIN SUNNY	Submitted
	36	20191PET 9007	JAFFAR SADIQ M R	Submitted
	37	20201LPE 0003	SHIVAKUMAR DEVENDRA PATIL	Submitted

Signature of Instructor In charge
Mr. Utkarsh Lall

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Dr. Suman Paul
Associate Professor and Head
Department of Petroleum Engineering

Assistant Professor
Department of Petroleum Engineering

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Course Code/Course Name	PET 258 Reservoir Simulation and Modeling Lab
Event Type	Problem solving
Task	Case Study on CMG STARS
Instructor In charge	Mr Utkarsh Lall Assistant Professor, Department of Petroleum Engineering
Submission Date	19-05-2022
Name of the student	Sanampudi Venkata Rami Reddy
ID number	20191PET0049

Problem statement	1. Using CMG Builder and STARS, simulate a production well with the following inputs and answer the question: Name- IDNo.dat Simulator- STARS Working Units- SI Porosity- Single Porosity Simulation Start Date - 1/1/2005 Pattern - Normal 5 spot Pattern Area - 10 acres Thickness of Reservoir- 30m Top of Reservoir - 500m Dip Angle - 0 degrees Approximate block thickness - 4m Approximate block size - 6

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Porosity - 0.3

Permeability - I=J= 400, K=40

PVT to be imported - Black Oil

Temperature- 37.7778 degree Celsius

Max Pressure - 12000 kPa

Bubble Point Pressure - 8576 kPa

Stock Tank Oil Gravity(API) -21

Gas Gravity - 0.65

Match the viscosity of Oil with reference to bubble point pressure as 120 cp

In generate water properties using correlations take reference pressure - 8576 kPa

Set Value - Bubble Point Pressure

Temperature (degree Celsius)	Oil Viscosity (cp)
37	420
50	340
70	250

SWCON - 0.3

SWCRIT - 0.3

SOIRW - 0

SORW - 0.4

SOIRG - 0.0

SORG - 0.45

SGCON - 0

SGCRIT - 0.05

KROCW - 1

KRWIRD - 1

KRGCL - 0.3

KROGCG - ---

All other exponents - 2

Initial Conditions -

Pressure Correction - Phase

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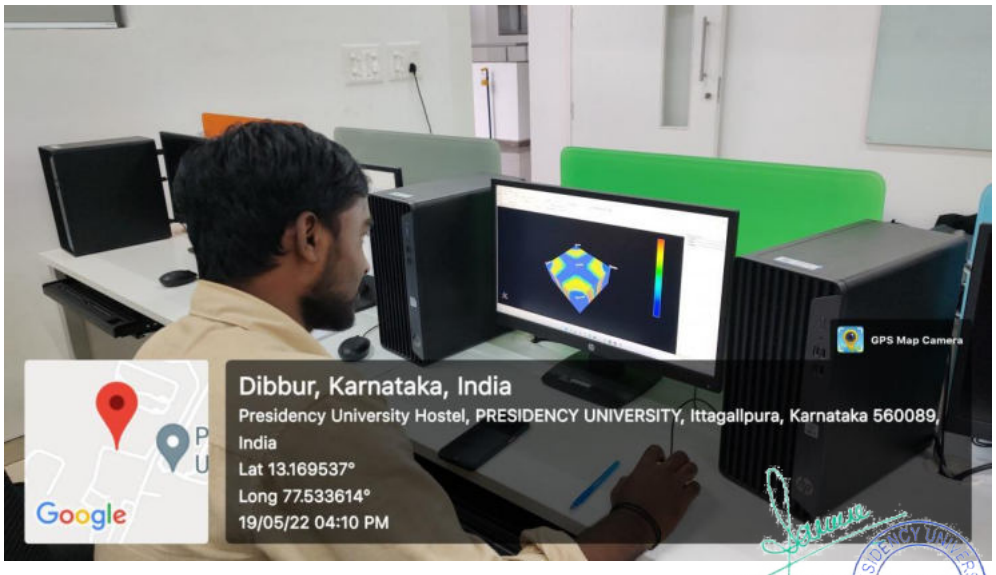
	Reference Pressure - 8576 kPa Reference depth - 504m WOC - 526 GOC - -4 First time step after well change (DTwell) - 0.001 In all injectors in well and recurrent, the top 3 perforations are to be removed. In producer, remove the bottom 2 perforations. Constraints for Injector 1: OPERATE at BHP 12000kPa OPERATE at STW 250m^3/day For the injected fluid: Temperature - 325 Steam Quality - 0.8 Mole fraction of Water -1 Copy all the events of injector 1 to other 3 injectors along with the dates. Constraints for Producer: OPERATE at BHP 200kPa OPERATE at STL 100m^3/day Calculate: 1) Oil phase volume(m^3), 2) Gross formation volume (m^3), 3) Draw the rough graphs of Oil Rate at Standard Conditions and Water Cut at Standard Conditions.
Student solution	 REGISTRAR Registrar PRESIDENCY UNIVERSITY BANGALORE
Evaluation	The evaluation was done by visualizing the .srf file in the CMG STARS and 3D Results Simulator and the simulated file after normal run was found to be correct.

Instructor In-charge
Mr. Utkarsh Lall
Assistant Professor
Department of Petroleum Engineering

Event No.:	BJG13	**Date:**	06-05-2022 (1 Day)
Event Category:	Technical	**Event Type:**	Case Study
Mode of Event:	Offline	**No. of Participant(s):**	30
Event Category:	**Problem Solving**		
Event Coordinator:	Mr Bhairab Jyoti Gogoi Assistant Professor, Department of Petroleum Engineering		

Event Title:	Case study on Drilling Bit selection criteria
Resource Person:	Mr Bhairab Jyoti Gogoi Assistant Professor, Department of Petroleum Engineering
Event Objective:	The main objective of this events is to provide an opportunity to student's to apply their knowledge on Well Design and Construction to solve problems. This event will help the student to develop- SKILL and EMPLOYBILITY
Event Photo(s):	

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List of Participants

Sl. No.	ID No.	Student Name	Attendance
1	20191PET0012	FEROZ AHMED KHUDAVAND	Present
2	20191PET0015	GILAKA PAVAN	Present
3	20191PET0017	HITHESH P V	Present
4	20191PET0020	KOKEERAN P	Absent
5	20191PET0022	KUSHAL K	Present
6	20191PET0023	M MOHAMED ALFIATH	Present
7	20191PET0032	MOHAMMED MUZAMMIL PATVEGAR	Present
8	20191PET0033	MOHAMMED REEHAN AZHAR	Present
9	20191PET0037	MOHD ZUBAIR	Present
10	20191PET0038	MOIDEEN ANSAF	Present
11	20191PET0039	NABEED MUNNNA	Present
12	20191PET0042	PRASHANTH R	Present
13	20191PET0043	RISHU SINGH	Present
14	20191PET0044	RIZVI ABUSAMAMA TAHQIQHUSAIN	Present
15	20191PET0046	SAI DINESH M	Present
16	20191PET0048	SAMEER MUHAMMED	Present
17	20191PET0049	SANAMPUDI VENKATA RAMI REDDY	Present
18	20191PET0051	SHAIK MUSTAK	Present
19	20191PET0054	SYED IKHLAS	Present
20	20191PET0056	TARUN KUMAR A	Present
21	20191PET0058	TAUSIF AHMED	Present
22	20191PET0059	THOTA GUNA NAGA MURARI	Present
23	20191PET0061	UPPARAPALLY DIVAKAR REDDY	Present
24	20191PET0062	VEMULA PRASHANTH	Present
25	20191PET0063	YADAVALI VENKAT	Present

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26	20191PET0067	SHAIK MUJEEB UR REHAMAN	Present
27	20191PET0068	RIZWAN RIZWAN	Present
28	20191PET9002	PILLI KALYAN KUMAR	Present
29	20191PET9004	ANSTIN SUNNY	Present
30	20201LPE0001	MALIPEDDU SAI PRANAV	Present
31	20201LPE0003	SHIVAKUMAR DEVENDRA PATIL	Present

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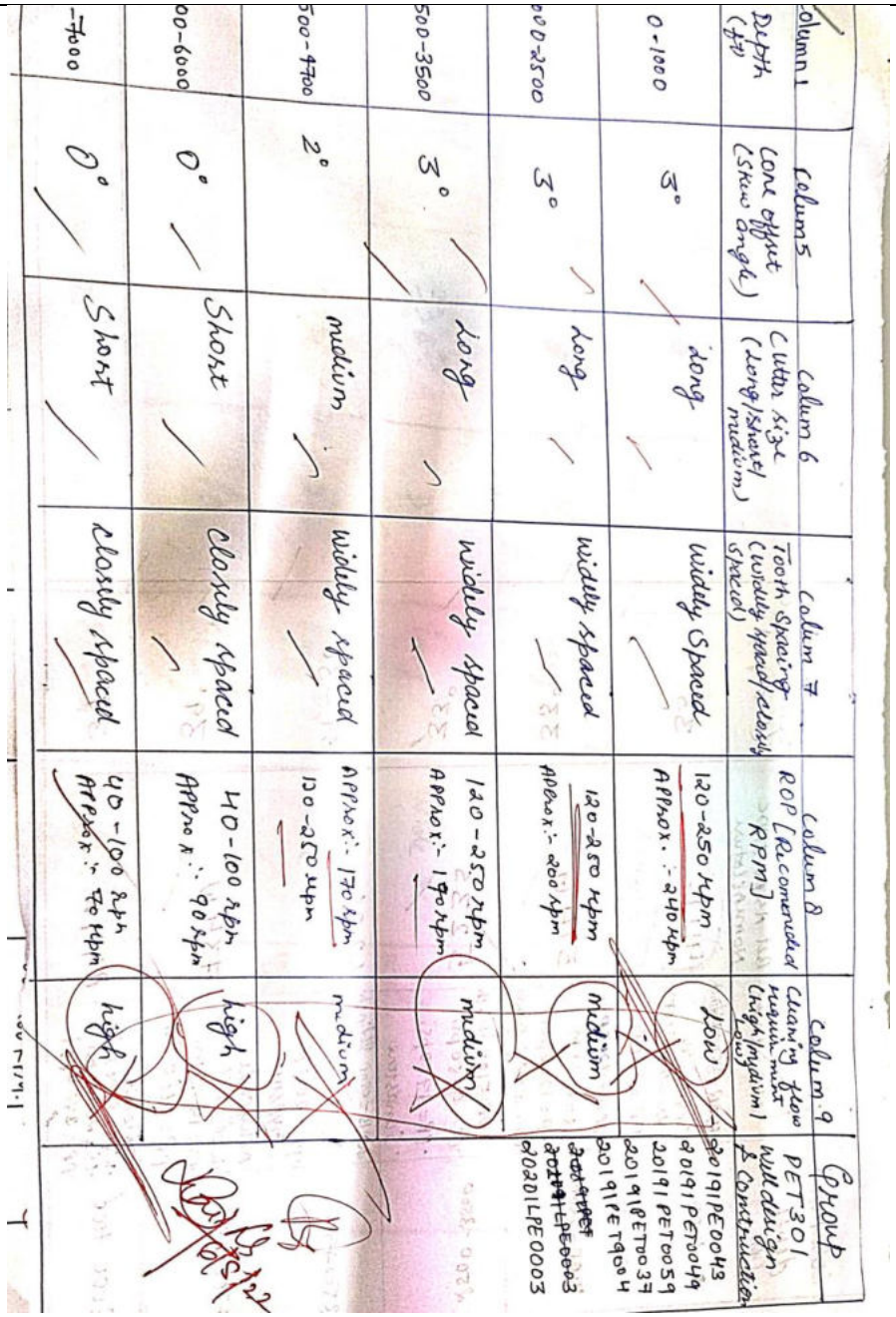
Student's report



Column 1	Column 5	Column 6	Column 7	Column 8	Column 9	Group
Depth (ft)	Cone offset (Skew angle)	Cutter size (long/short/ medium)	Tooth Spacing (widely spaced/ closely spaced)	ROP [Recommended RPM]	Quantity flow required [High/medium/ Low]	PET301 Mud design & Construction
0-1000	3°	long	widely Spaced	120-250 rpm Approx. : 240 rpm	low	20191PE0043 20191PE0049 20191PE0059 20191PE0037 20191PE0904 ~~20191PE0003~~ ~~20191PE0003~~ 20201LPE0003
1000-2500	3°	long	widely spaced	120-250 rpm Approx. : 200 rpm	medium	
2500-3500	3°	long	widely spaced	120-250 rpm Approx. : 190 rpm	medium	
3500-4700	2°	medium	widely spaced	Approx. : 170 rpm 120-250 rpm	medium	
4700-6000	0°	Short	closely spaced	40-100 rpm Approx. : 90 rpm	high	
6000-7000	0°	Short	closely spaced	40-100 rpm Approx. : 70 rpm	high	

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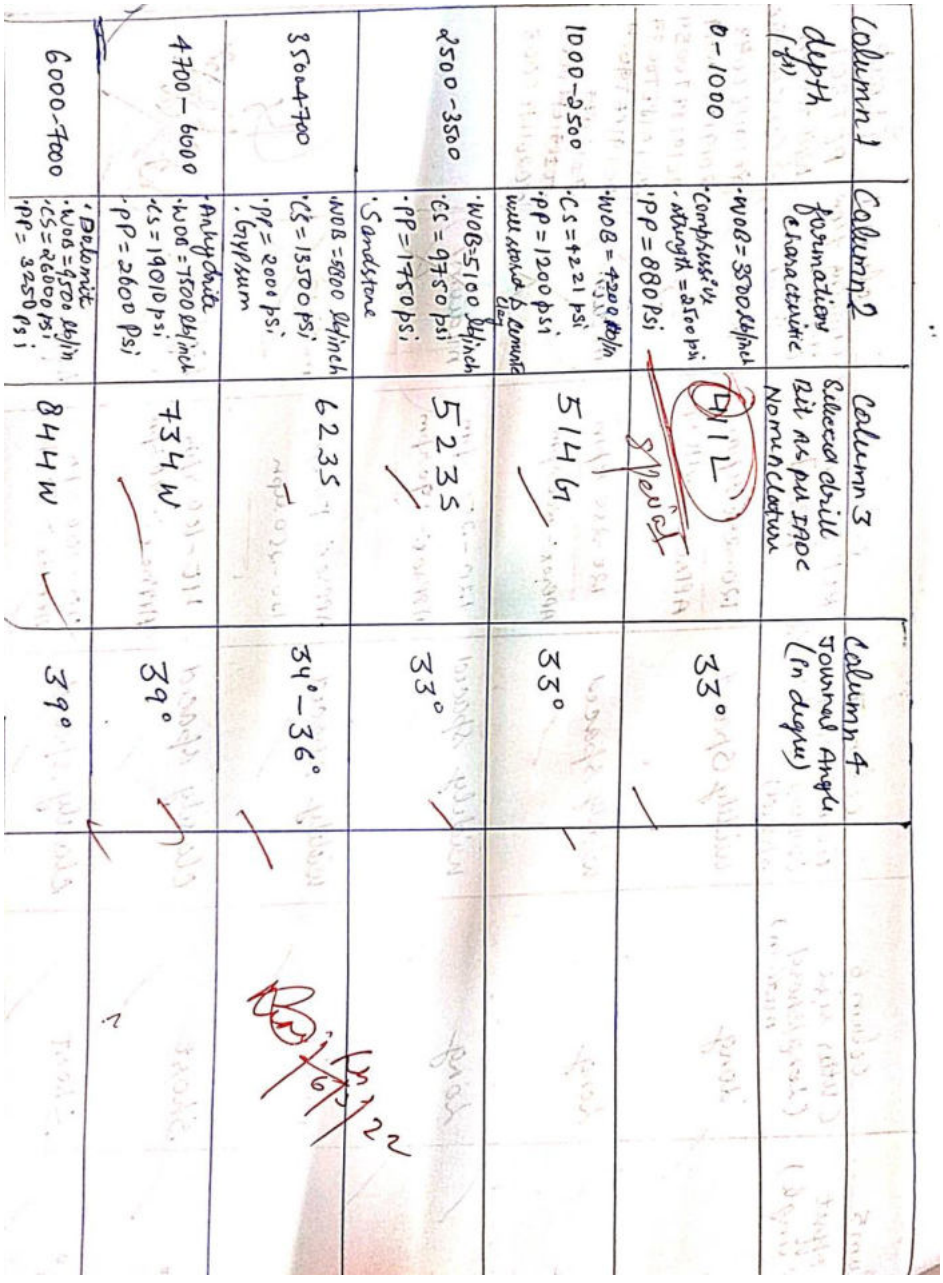

Column 1	Column 2	Column 3	Column 4
depth (ft)	formation characteristic	Bit as per IADC Nomenclature	Journal Angle (in degree)
0-1000	• WOB = 3500 lbf/inch • Compressive strength = 2500 psi • PP = 880 psi	DNIL	33°
1000-2500	• WOB = 4200 lbf/in • CS = 4221 psi • PP = 1200 psi • well stored & consolidated	514G	33°
2500-3500	• WOB = 5100 lbf/inch • CS = 9750 psi • PP = 1750 psi • Sandstone	5235	33°
3500-4700	• WOB = 6800 lbf/inch • CS = 15500 psi • PP = 2000 psi • Gypsum	6235	34°-36°
4700-6000	• Anhydrite • WOB = 7500 lbf/inch • CS = 19010 psi • PP = 2600 psi	734W	39°
6000-7000	• Dolomite • WOB = 9500 lbf/in • CS = 26000 psi • PP = 3250 psi	844W	39°

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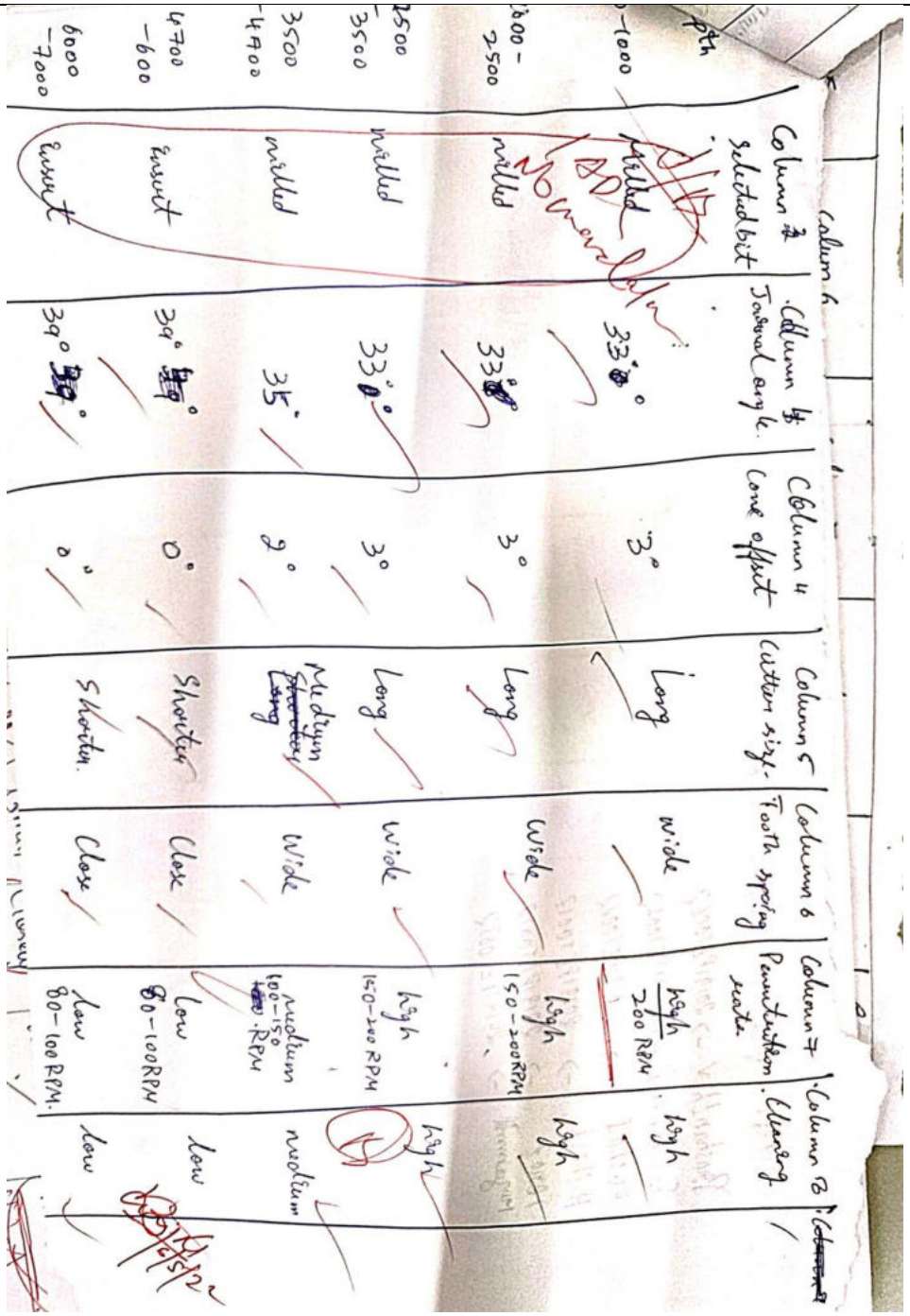

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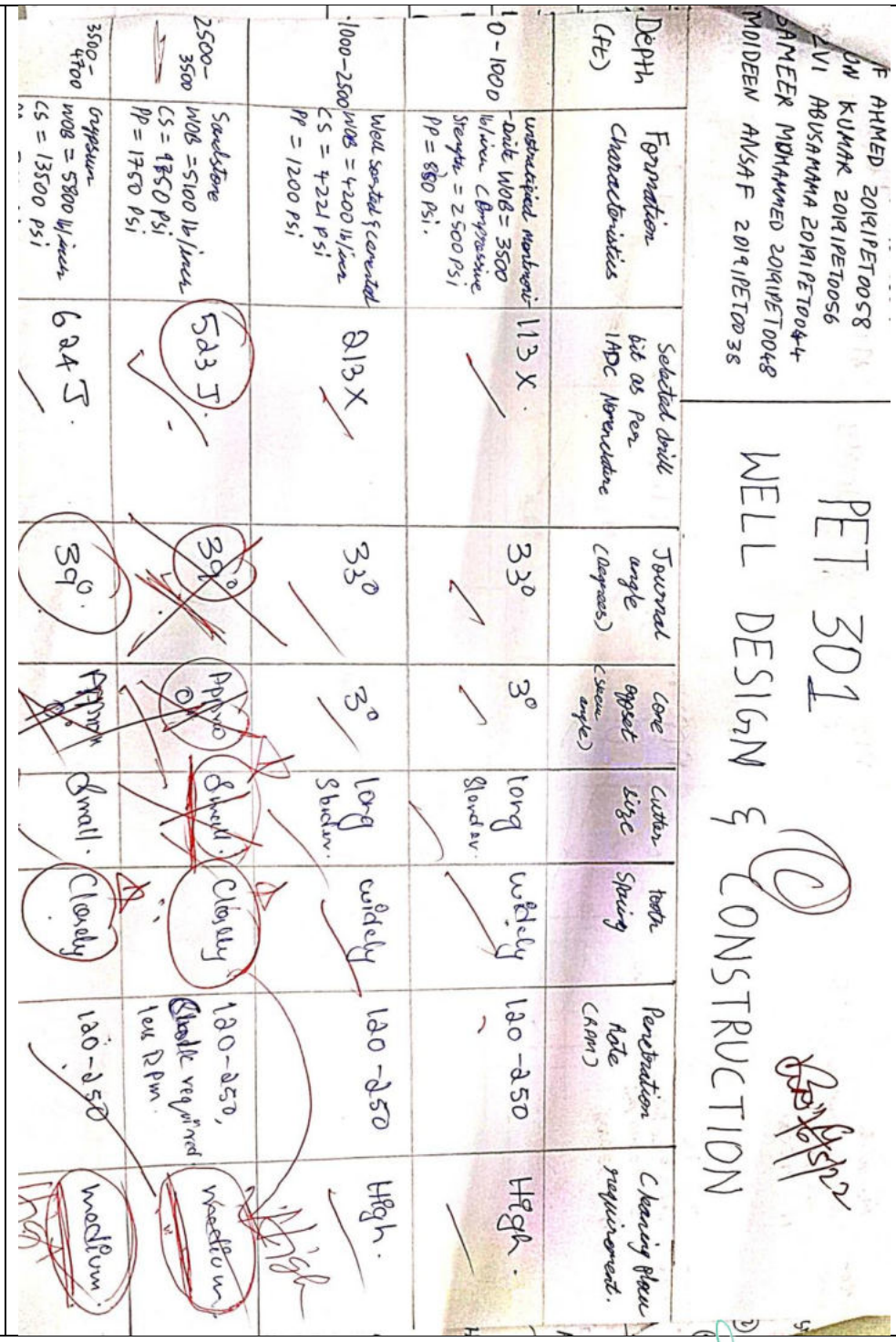

PET 301
WELL DESIGN & CONSTRUCTION

F AHMED 20191PET0058
ON KUMAR 20191PET0056
VI ABUSAMMA 20191PET0044
AMEER MOHAMMED 20191PET0048
MOIDEEN ANSAF 20191PET0038

Depth (ft)	Formation Characteristics	Selected drill bit as per IADC Nomenclature	Journal angle (degrees)	Core offset (skew angle)	Cutter size	tooth Spacing	Penetration Rate (RPM)	Cleaning flow requirement.
0-1000	unconsolidated montmorillonite clay WOB = 3500 lb/inch Compressive Strength = 2500 PSI PP = 880 PSI.	113 X	33°	3°	long	widely	120-250	High.
1000-2500	well sorted fine grained WOB = 4200 lb/inch CS = 4221 PSI PP = 1200 PSI	213 X	33°	3°	long Standard	widely Spaced	120-250	High.
2500-3500	Sandstone WOB = 5100 lb/inch CS = 9850 PSI PP = 1750 PSI	523 J.	39°	Approved	Small.	Closely	120-250, Should be reduced less RPM.	Medium.
3500-4700	Gypsum WOB = 5800 lb/inch CS = 13500 PSI	624 J.	39°	Approved	Small.	Closely	120-250	Medium.

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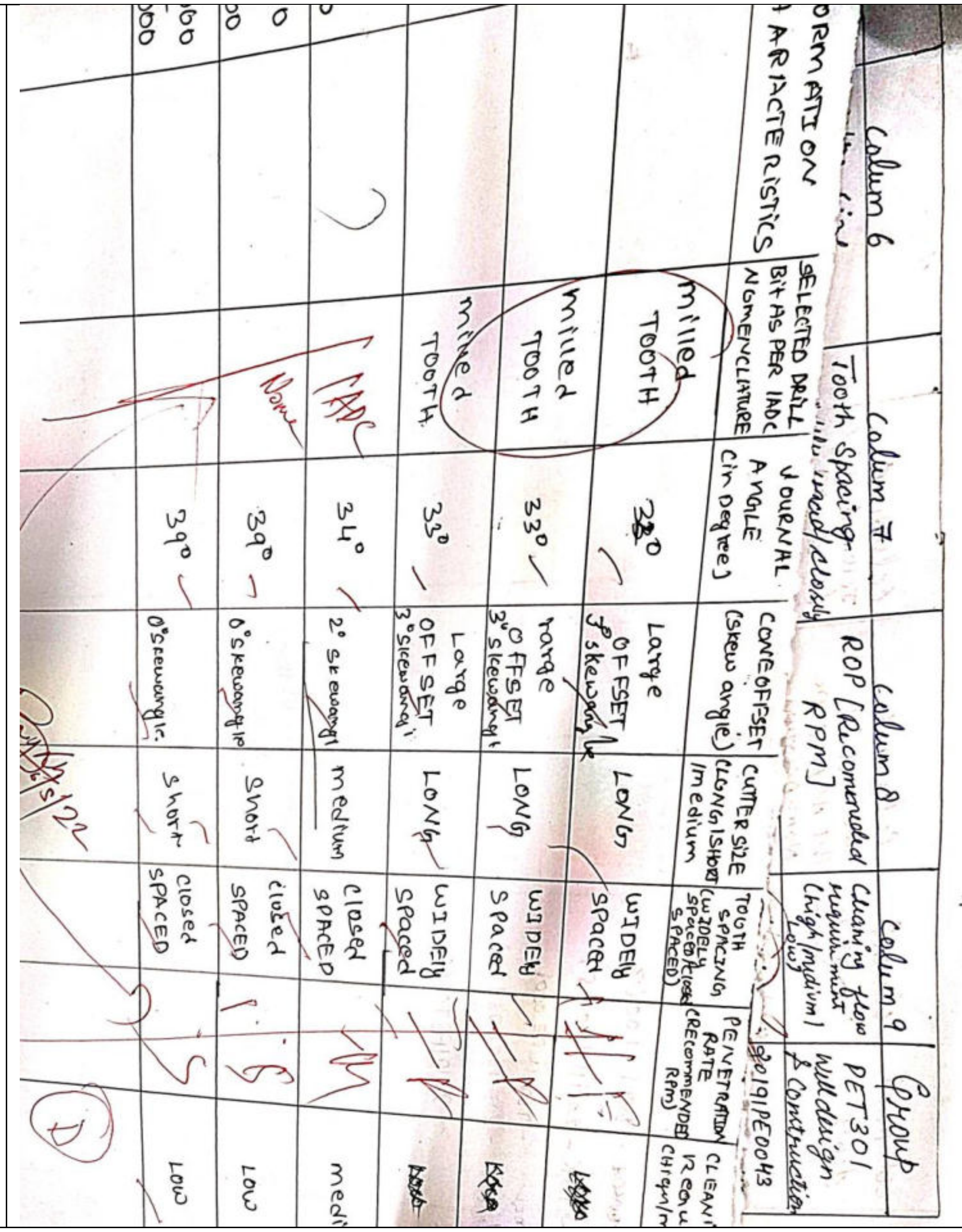
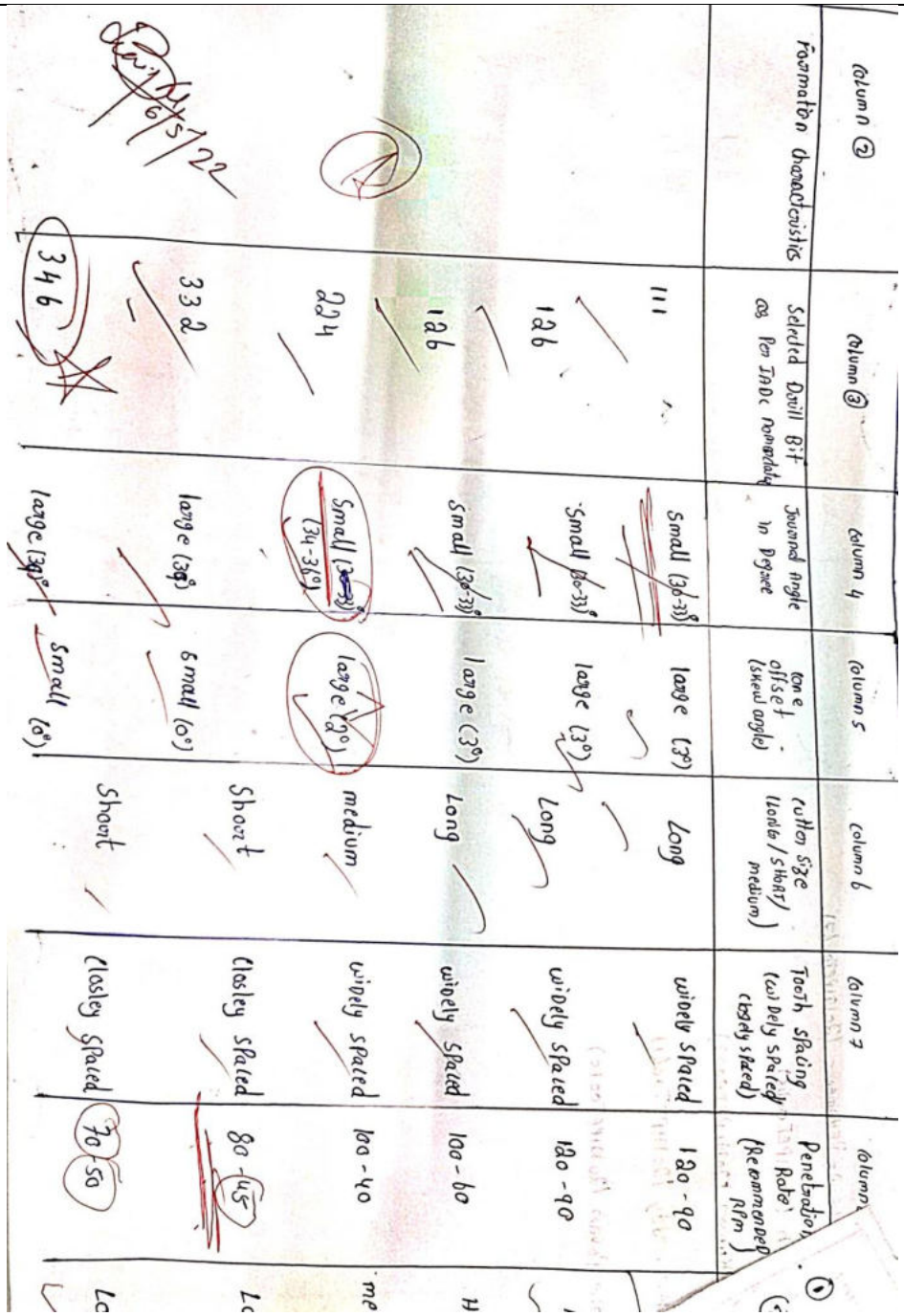


Colum 6	Colum 7		Colum 8		Colum 9		Group
	Tooth Spacing [illegible]/closely		ROP [Recomended RPM]		Cleaning flow requirement (high/medium/Low)		PET301 Well design & Construction 20191PE0043
FORMATION CHARACTERISTICS	SELECTED DRILL BIT AS PER IADC NOMENCLATURE	JOURNAL ANGLE (in Degree)	CONE OFFSET (skew angle)	CUTTER SIZE (LONG/SHORT/medium	TOOTH SPACING (WIDELY SPACED/CLOSE SPACED)	PENETRATION RATE (RECOMMENDED RPM)	CLEANING REQUIREMENT (High/m…)
	milled TOOTH	33°	Large OFFSET 3° skewangle	LONG	WIDELY spaced		
	milled TOOTH	33°	Large OFFSET 3° skewangle	LONG	WIDELY Spaced		
	milled TOOTH	33°	Large OFFSET 3° skewangle	LONG	WIDELY Spaced		
	IADC	34°	2° skewangle	medium	closed SPACED		medium
	None	39°	0° skewangle	Short	closed SPACED		Low
		39°	0° skewangle	short	closed SPACED		Low



Column ①	Column ②	Column ③	Column 4	Column 5	Column 6	Column 7	Column
	Formation characteristics	Selected Drill Bit as Per IADC nomenclature	Journal angle in Degree	Cone offset (skew angle)	Cutter size (Long / short / medium)	Tooth spacing (widely spaced / closely spaced)	Penetration Rate (Recommended RPM)
		111	Small (36-33)	large (3°)	Long	widely spaced	120 - 90
		126	Small (36-33)	large (3°)	Long	widely spaced	120 - 90
		126	Small (36-33)	large (3°)	Long	widely spaced	100 - 60
		224	Small (34-36°)	large (2°)	medium	widely spaced	100 - 40
		332	large (39°)	6 mall (0°)	Short	Closely spaced	80 - 45
		346	large (39°)	small (0°)	Short	Closely spaced	70 - 50

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Participation certificate:	 
Event Summery	The event was conducted successfully. Total 30 number of students participate in the event. Top three score holders will be given merit certificate.

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Event Coordinator
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