PANTHEON RESOURCES PLC

Webinar

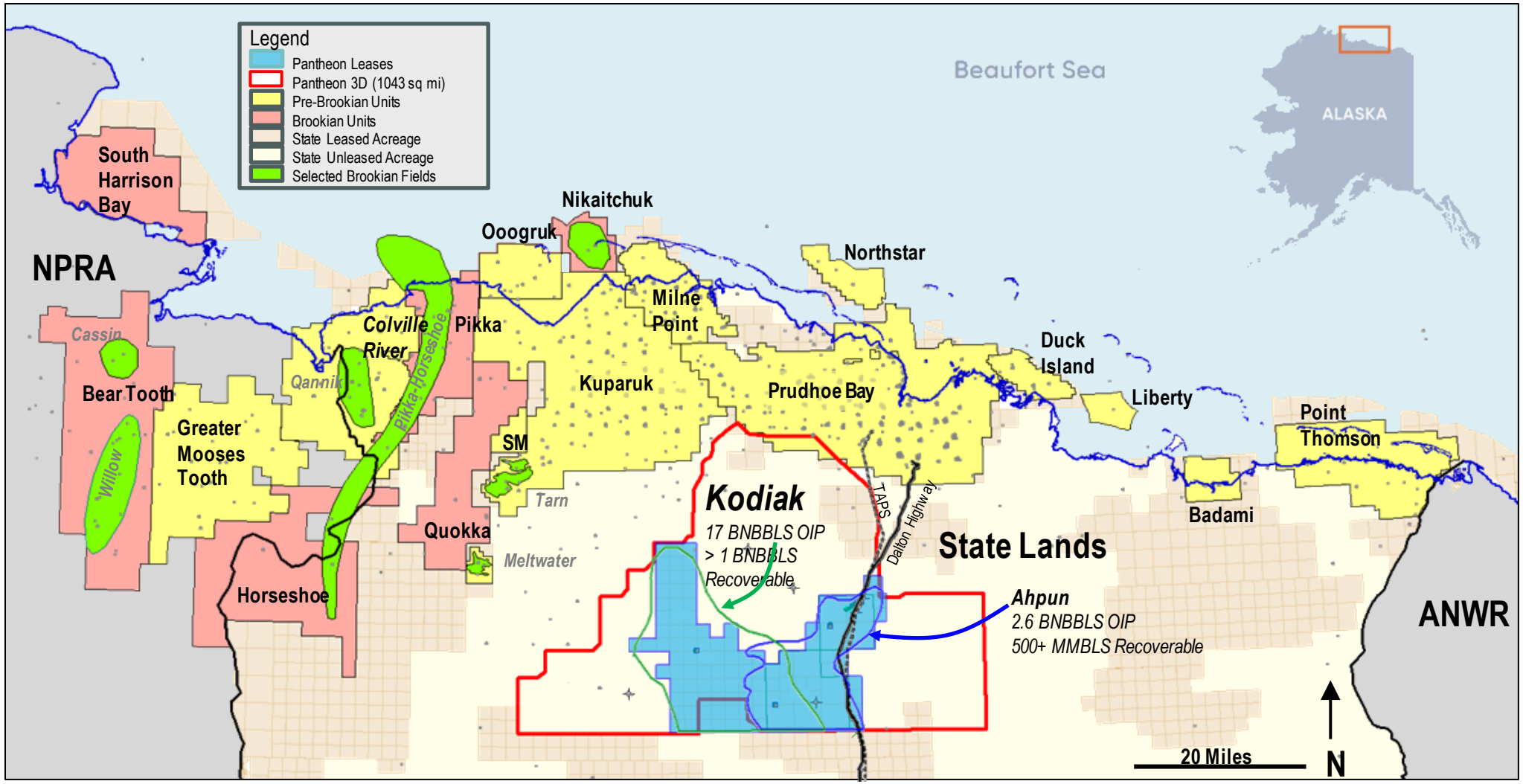
19th July 2023

Jay Cheatham – Chief Executive Officer
David Hobbs – Executive Chairman
Tony Beilman – Sr Vice President, Engineering
Michael Duncan – VP Operations

Disclaimer

- This document, together with any oral briefing which accompanies it, (the "Presentation") is being issued solely by Pantheon Resources Plc (the "**Company**").
- The Presentation does not constitute or form part of any offer or invitation to sell or issue, or any solicitation of any offer to purchase, subscribe for or otherwise acquire any securities of the Company or any of the business or assets described herein, nor shall any part of it nor the fact of its distribution form part of or be relied on in connection with a ny contract or investment decision relating to the securities of the Company, nor does it constitute a recommendation regarding the securities of the Company. In particular, the Presentation and the information contained in the Presentation do not constitute an offer of securities for sale in the United States.
- The Presentation is being supplied to you solely for your information. The information in the Presentation has been provided by the Company or obtained from publicly available sources. No reliance may be placed for any purposes whatsoever on the information or opinions contained in the Presentation or on its completeness.
- Certain statements, beliefs and opinions in the Presentation are forward-looking, which reflect the Company's or, as appropriate, the Company's directors' current expectations and projections about future events. By their nature, forward-looking statements involve a number of risks, uncertainties and assumptions that could cause actual results or events to differ materially from those expressed or implied by the forward-looking statements. These risks, uncertainties and assumptions could adversely affect the outcome and financial effects of the plans and events described herein. Forward-looking statements contained in the Presentation regarding past trends or activities should not be taken as a representation that such trends or activities will continue in the future. The Company does not undertake any o bligation to update or revise any forward-looking statements, whether as a result of new information, future events or otherwise. You should not place undue reliance on forward-looking statements, which speak only as of the date of the Presentation.
- Nothing in this document or in the documents referred to in it should be considered as a profit forecast. Past performance of the Company or its shares cannot be relied on as a guide to future performance.
- Cautionary Statement: The estimated quantities of petroleum that may be potentially recovered by the application of a future development project relate to undiscovered accumulations. These estimates have both an associated risk of discovery, appraisal and development. Further exploration, appraisal and evaluation are required to determine the existenc e of a significant quantity of potentially movable hydrocarbons. The estimates contained within this presentation are only estimates and there can be no guarantees that these estimates will be realised.
- The Company has provided the information in the Presentation, which does not purport to be comprehensive and has not been verified. No representation or warranty, express or implied, is or will be made and no responsibility or liability is or will be accepted by the Company or by any of its respective directors, officers, advisers, agents or affiliates or by any other person as to or in relation to the accuracy or completeness of the Presentation or the information or opinions contained herein or supplied herewith or any other written or oral information made available to any party and no responsibility or liability is accepted for the accuracy or sufficiency of any of the information or opinions, for any errors, omissions or mis-statements, negligent or otherwise (other than in the case of fraud), or for any other communication, written or otherwise, made to anyone in, or supplied with, the Presentation. In particular, no representation or warranty is given as to the achievement or reasonableness of any mineral resource, future projections, management estimates, prospects or returns.
- Accordingly, neither the Company nor any of its respective shareholders, directors, advisers, agents or affiliates shall be liable for any direct, indirect or consequential loss or damage suffered by any person as a result of relying on any statement or omission in, or supplied with, the Presentation or in any future communications that are issued by the Company.
- The Presentation has been delivered to interested parties for information only and upon the express understanding that such information is of a general nature and does not relate to any specific transaction. The Presentation is subject to updating, revision and amendment. The information and opinions contained herein are provided as at the date of thi s Presentation and are subject to change without notice. The Company undertakes no obligation to provide the recipient with access to any additional information or to correct any inaccuracies or omissions which may become apparent.
- The content of the Presentation has not been approved for the purposes of section 21 of the Financial Services and Markets Act 2000 ("**FSMA**"). The Presentation is only being made available to the following:
    - *persons having professional experience in matters relating to investments and who are investment professionals as specified in Article 19(5) of the Financial Services and Markets Act 2000 (Financial Promotion) Order 2005 (the "**Financial Promotion Order**"); and*
    - *persons to whom Article 49(2) of the Financial Promotion Order applies, being high net worth companies, unincorporated associations, partnerships or trusts or their respective directors, officers or employees as described in Article 49 of the Financial Promotion Order.*
- It is a condition of your receiving the Presentation that you fall within, and you warrant to the Company that you fall within, one of the categories of person described above. If the recipient does not fall within one of the categories above, the recipient should either return, destroy or ignore the information in the Presentation.
- If you are in any doubt about the contents of the Presentation, you should consult a person authorised by the Financial Conduct Authority who specialises in advising on securities of the kind described in the Presentation.
- Neither the Presentation, nor any copy of it, may be taken or transmitted into the United States, Canada, Australia, South Africa or Japan or into any jurisdiction where it would be unlawful to do so. Any failure to comply with this restriction may constitute a violation of relevant local securities laws.
- By attending the presentation to which this document relates or by accepting this document in any other way you agree to be bound by the foregoing provisions.
- Competent Person's statement: Michael Duncan has sufficient experience relevant to the style of mineralisation and type of deposit under consideration, and to the activity which he is undertaking to qualify as a Competent Person in accordance with the guidance note for Mining, Oil & Gas Companies issued by the London Stock Exchange in respect of AIM Compa nies, which outlines standards of disclosure for mineral projects. Michael Duncan consents to the inclusion in this Presentation of the matters based on his information in the form and context in which it appears.

Pantheon's North Slope Field Development Assets
Ahpun and Kodiak



Alkaid 2 Well Test Data – Actual and Projected

Analysis Name	Class.	EUR_o Mstb	N_p Mstb	RR_o Mstb	Start Date MM/DD/YYYY	q_i stb/d	Δt year	d_i sec %/year	b	d_{lim} exp %/year	$(q_o)_f$ stb/d	End Date MM/DD/YYYY	$R^2_{log\,q\,vs\,t}$
Analysis 1		131.243	3.767	127.476	03/21/2023	118.1	41.83	71.852	1.650	3.000	3.0	01/16/2065	0.843

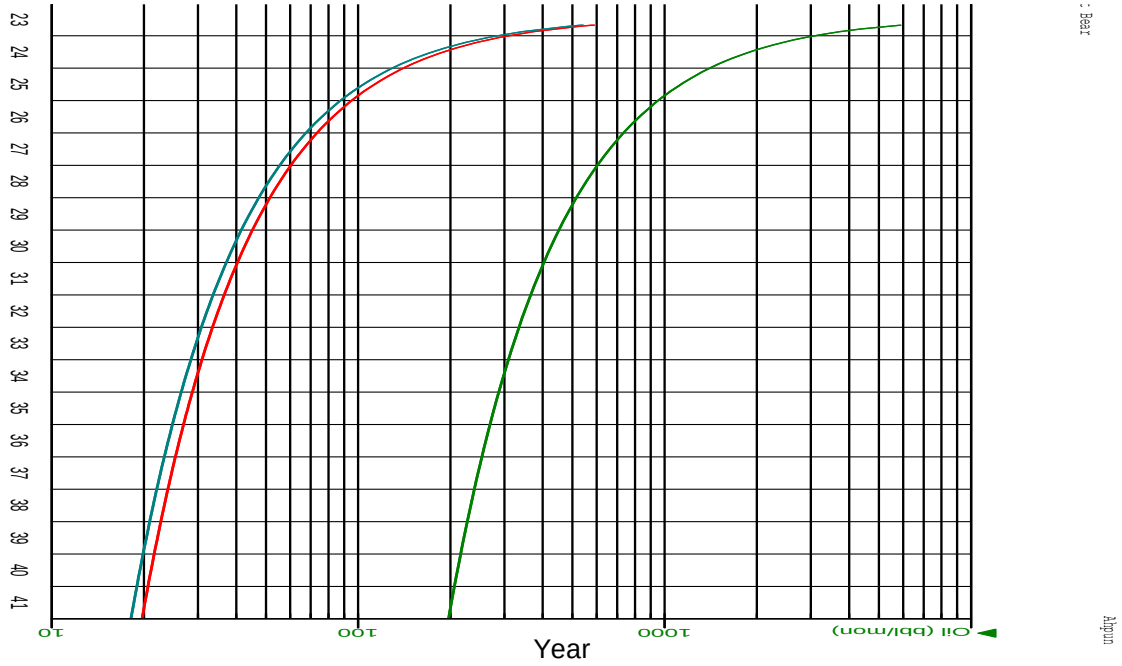
Analysis Name	Class.	EUR_g MMscf	G_p MMscf	RR_g MMscf	Start Date MM/DD/YYYY	q_i Mscf/d	Δt year	d_i sec %/year	b	d_{lim} exp %/year	q_f Mscf/d	End Date MM/DD/YYYY	$R^2_{log\,q\,vs\,t}$
Analysis 2		1637	47	1590	03/22/2023	1583.5	32.84	64.915	1.500	8.000	20.0	01/23/2056	0.576

Alkaid 2 (as completed)

- *EUR: 0.26 mmbbls,*
- *IP30: 505 bpd (pipeline liquids*)*
- *Remaining NPV_{10} at $70/bbl: approx $6.5 million*

Based on actual Alkaid 2 well performance (decline curve extrapolation and revised completion modeling)

** Oil, Condensate & NGLs*



Post Analysis of fracture treatments

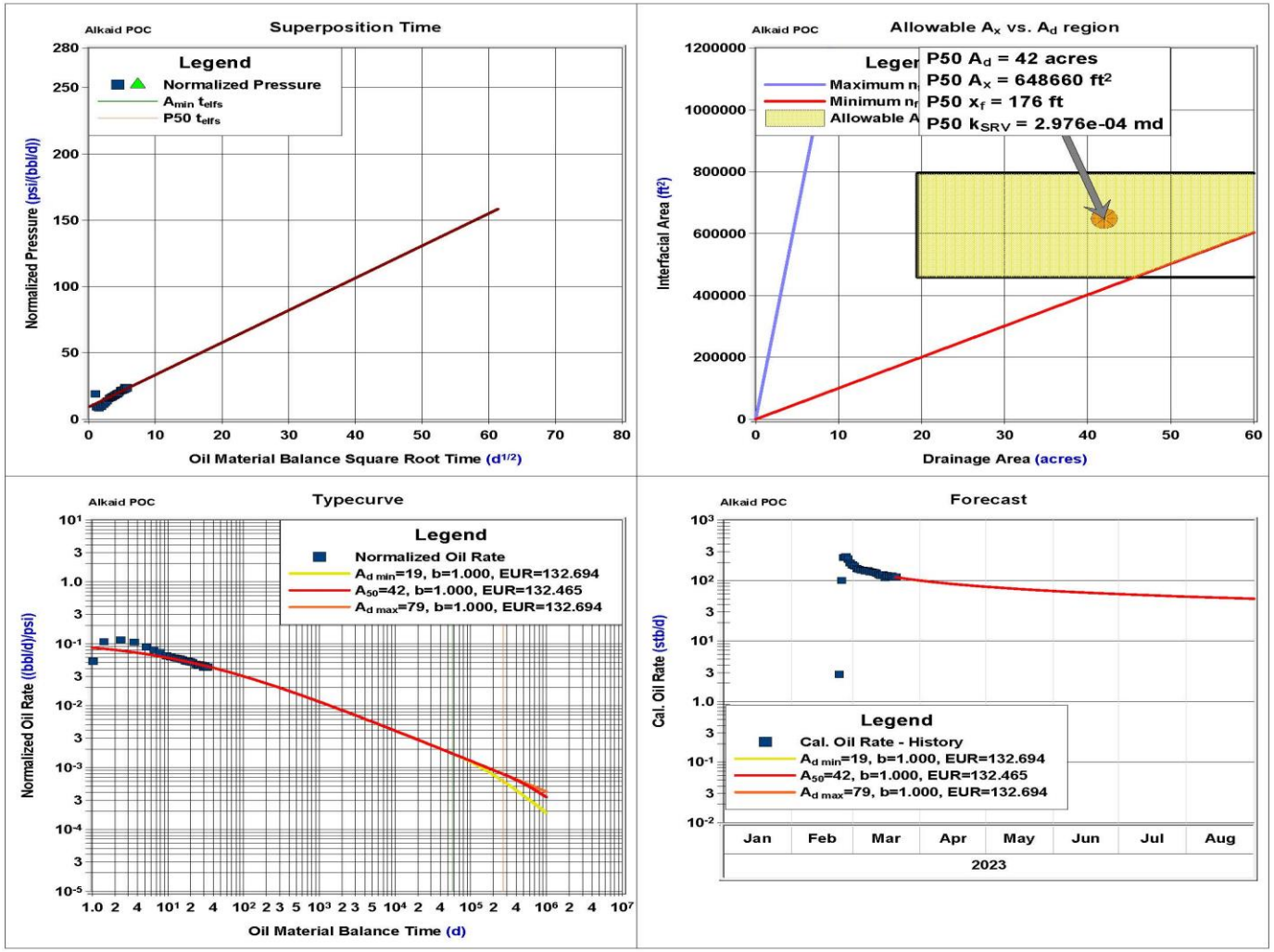
- Goals:
  - *Pressure response types for a Hydraulic Fractured Well (Ken Nolte Theory)*
  - *What is our pressure response telling us about frac extension and effectiveness?*
  - *Determine how our treatments compare to "effective" unconventional wells in other basins.*
  - *Determine what causes sand flow and remedies in future treatments.*

Completion/Fracture Stimulations

- Initial Fracture treatment design
  - *Stage spacing was 150 ft (some stages were 100 ft)*
  - *Perf cluster spacing was 26 ft/ 72 holes*
    - *The number of perforations reduced the rate below the generally accepted rate of 2 BPH which is the target rate for a limited entry-type frac job. This can cause some perfs to not break down and not take fluid, forcing other perfs to take the bulk of treatments.*
  - *Utilized 40/70 (~83%) sand and 30/50 (~17%) sand*
    - *High conductivity with large proppant can cause sand production*
  - *Average Proppant Conc 3 ppg and 2300 lbs/ft and fluid volume avg 40 bbls/ft*
  - *Average FG 0.65; Average ISIP 1731*

Material Balance analysis of base frac

Alkaid POC
UR-OST 1



Superposition Time Options

- Multiphase (Pseudo-Pressure) (Beta)
- GeoMechanical

Forecast Parameters

A_{min}	19	acres
b	1.000	
$(q_o)_f$	7.5	stb/d
Start Date	03/21/2023	MM/DD/YYYY
Δt	300.0	month
End Date	03/20/2048	MM/DD/YYYY
p_{wff}	1085.16	psi(a)

Input Parameters

Model Type	Hz - Multi Frac - SRV	
L_e	5200.0	ft
y_e	7500.0	ft
Max A_d	895	acres
$(k_{SRV})_{min}$	2.000e-04	md
$(k_{SRV})_{max}$	6.000e-04	md
$(n_f)_{min}$	4	
$(n_f)_{max}$	32	
$(h_f)_{min}$	150	ft
$(h_f)_{max}$	250	ft

Calculations

$A_c k_{SRV}^{1/2}$	11240.383	$md^{1/2}ft^2$
$A_c k_{SRV(Abs)}^{1/2}$	50981.587	$md^{1/2}ft^2$
$x_{f\,total}\, k_{SRV}^{1/2}$	11.240	$md^{1/2}ft$
$x_{f\,total}\, k_{SRV(Abs)}^{1/2}$	50.982	$md^{1/2}ft$
P50 A_x	648660	ft^2
P50 A_d	42	acres
P50 n_f	6	
P50 h_f	154.35	ft
P50 x_f	176	ft
P50 k_{SRV}	2.976e-04	md
P50 F_{CB}	132.1	
P50 t_{elfs}	269730	d
P50 OOIP	2280.3	Mstb
P50 EUR_o	132.465	Mstb
N_p	3.882	Mstb
P50 RR_o	128.583	Mstb
R^2	0.759	

- Comments

Evolution of Fracs in New Basins – Alkaid 2 Well Up Learning Curve

Hybrid, linear, and cross-link gel systems create good conductivity (high flow capacity at wellbore) but do not create the frac complexity (surface area contact) that slick water does.

Low treating rates lead to low frac complexity

30/50 proppant tends to screen out and flow back frac sand easier, resulting in excessive workovers to clean out sand from wellbore.

Generation	Gen1	Gen 2	Gen 3	Gen 4	Alkaid 2
Pump Rates	60-70	75-90	75-80	75-80	75
Fluid type	Linear gel system	Linear & xlink gel	Slick water	Slick water	Slick water
Stage Size	250 -300	210-220	150	180-190	110-219
Perf Cluster/ spacing per stage	45-50	45-50	45-50	18-25 ft	18-25
Number Perfs	72	55	40	48	72
Fluid Volume (bbls/ft)	20-25	20-25	35-40	55-65	30-35
Sand Volume (lbs/ft)	1000-1500	1500 -2000	2500-3000	2300-2500	1600-1700
Sand size	100 mesh & 40/70	100 mesh, 40/70 & 30/50	100 mesh, 40/70	100 mesh, 40/70	40/70 & 30/50 17% 30/50
Max Sand concentration (PPG)	2-2.5	4-5.0	2-2.25 ppg	2-2.25 ppg	3-4
Percentage of 100 mesh	15-20%	15-20%	45 %	55-65%	0
comments	Focus on maximize frac stages to minimize costs	Focus on building high sand pack near wellbore (wider fracture)	Limited number of perfs to achieve a limited entry	Higher fluid volumes per lateral ft, Closer cluster spacing on perfs, Increased 100 mesh	Over perforated (ideal 2bpm)

*Highlighted areas represent Alkaid 2 design vs planned design

Interpretation of Pressure response during Fracture Treatments

- Types and interpretations
  - *Type I & II (Often very short time between these two types)*
    - *I: fracture initiation Restricted growth vertically*
    - *II: Fracture Growth both in width and area (height and length)*
  - *Type III & IV*
    - *Type III is usually indicative of horizontal growth and minimal height growth. In essence, we have reached the boundary of growth and dealing with proppant placement*
    - *Type IV is indicative of Unrestricted frac height growth; in essence, the vertical boundary has not been reached. Most of the frac stages on the Alkaid 2h exhibited this type of response*
      - *Some Common adjustments would be to pump a lighter sand (i.e. 100 Mesh) to address any fluid losses and to help maximize the effectiveness of the proppant.*
      - *Adjust Fracture treatment to take into account the fracture heights as the total volume of fracture is incorporated in the design.*
        - *Logs data/ Rock Properties of boundary formation*
        - *Increase volumes of Treatment volumes (with 100 Mesh lighter proppant that also acts as fluid diverter) to account for the frac height*

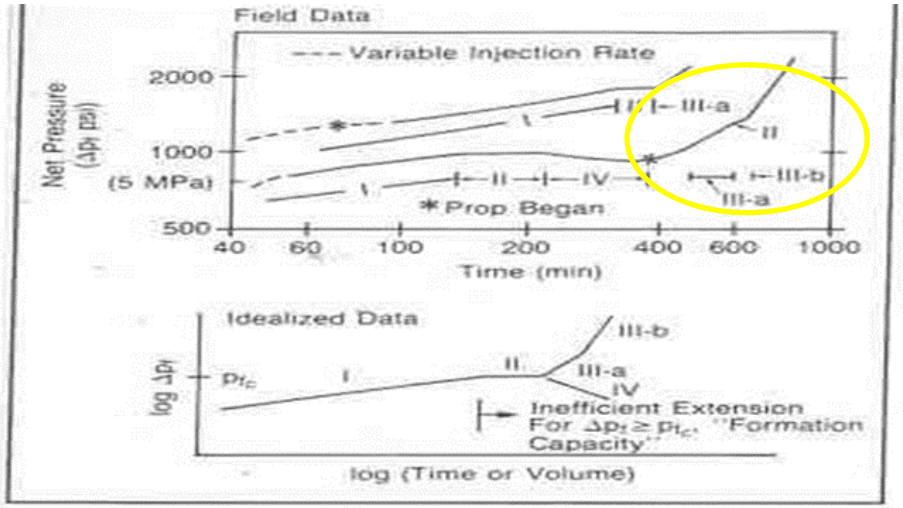


Figure 7-8—Log-log slope interpretation for field and idealized data. (After Nolte, 1982.)

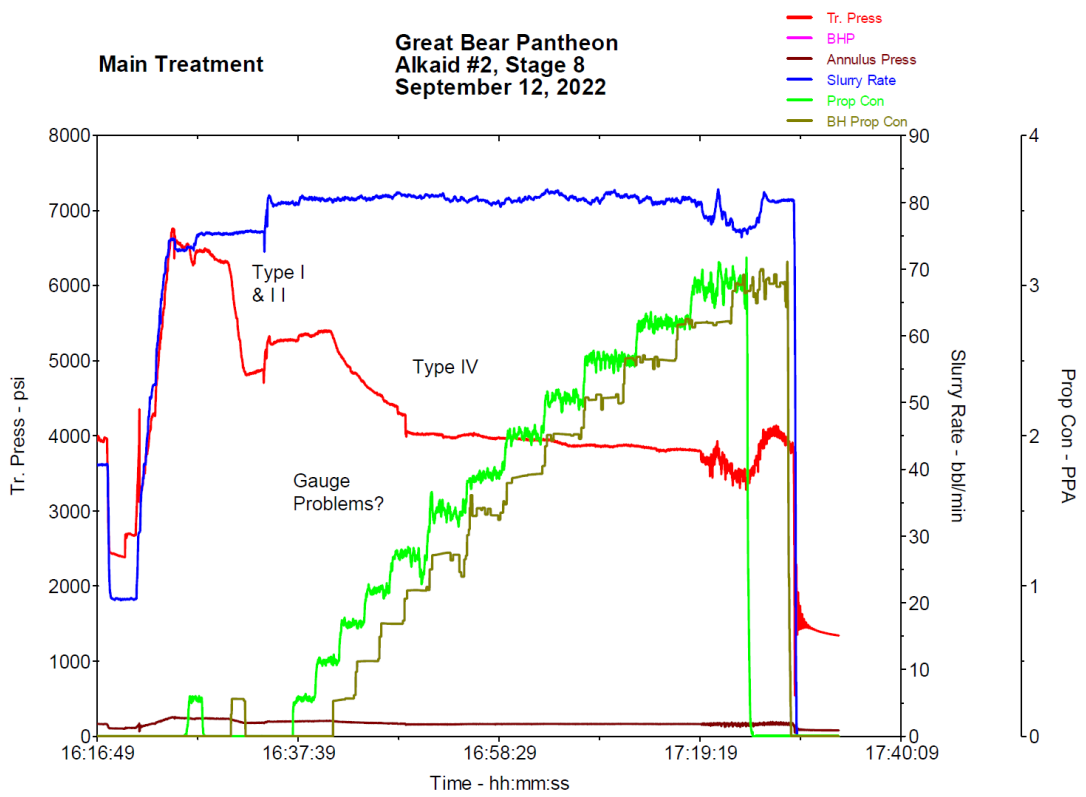
Slopes of Fracturing Pressures and Their Interpretation

Type	Approximate Log-Log Slope Value	Interpretation
I	1/8 to 1/4	Restricted Height and Unrestricted Extension
II	0	a) Height Growth b) Fissure Opening
IIIa	1	Restricted Extension (Two Active Wings)
IIIb	2	Restricted Extension (One Active Wing)
IV	Negative	Unrestricted Height Growth

Table 7-3—Slopes of fracturing pressures and their interpretation.

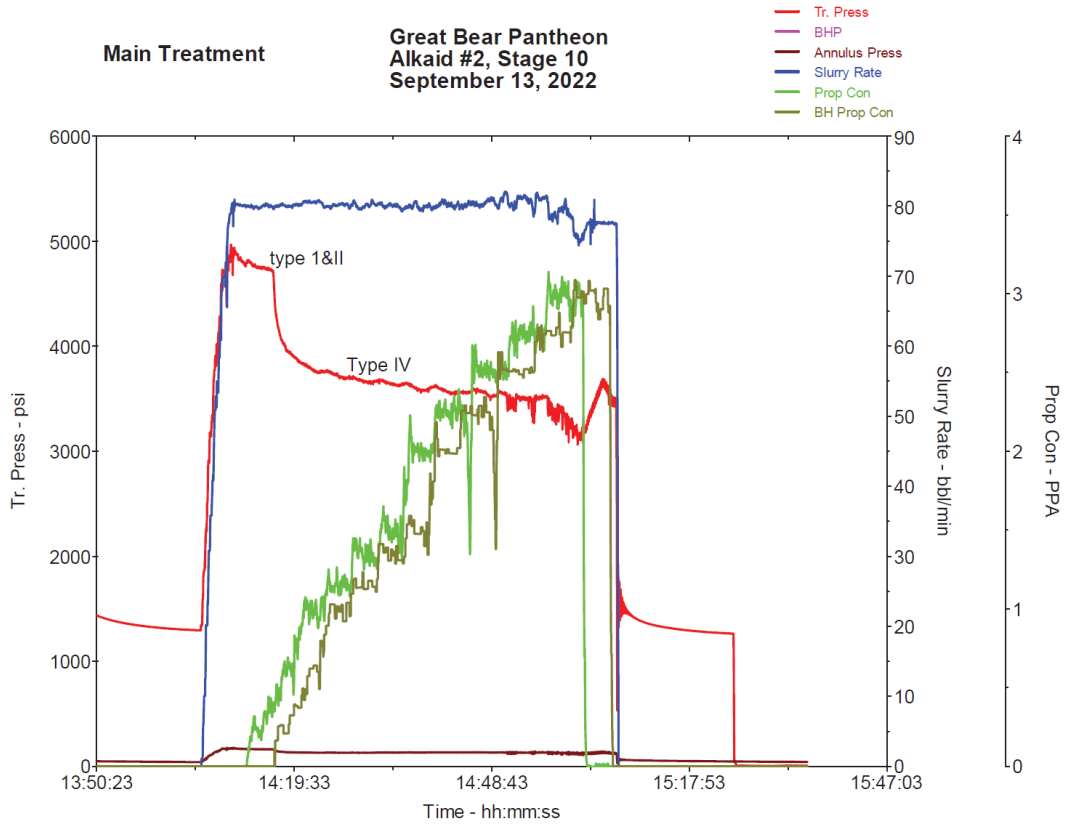
Example Frac Stages: Alkaid-2 Stages 8 & 10

Section 4: Stage 8, Treatment Plots



Schlumberger

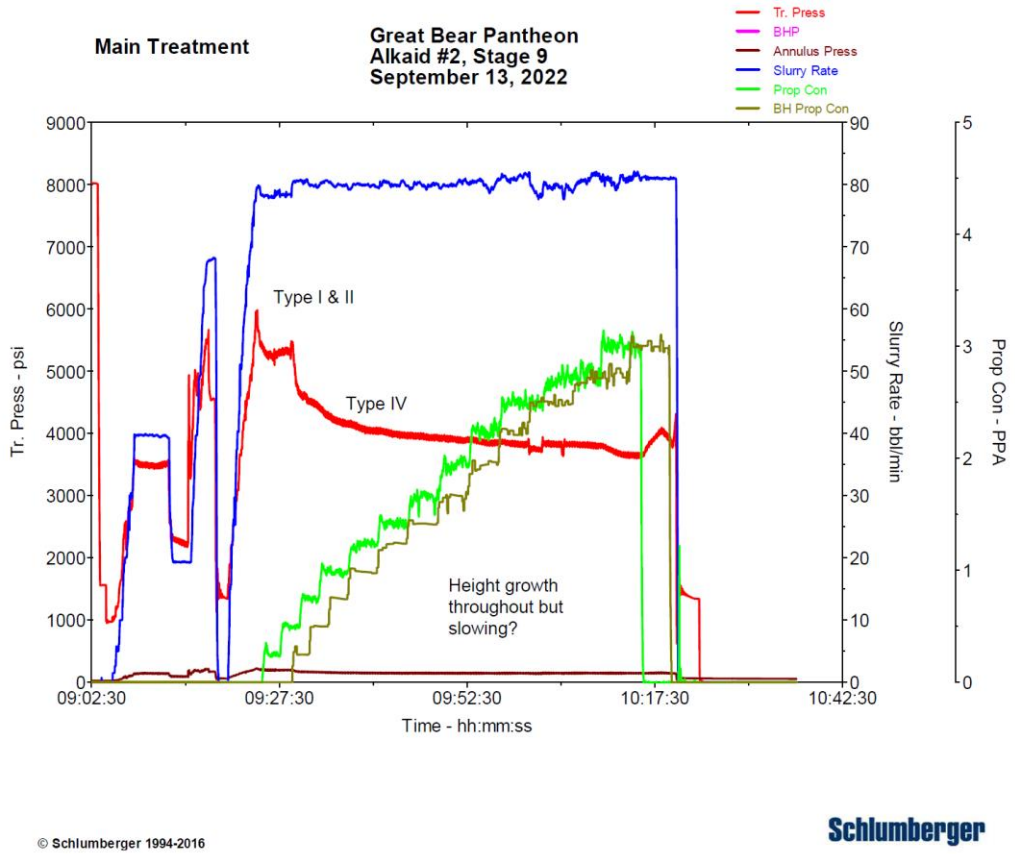
Section 4: STG 10, Treatment Plots



Schlumberger

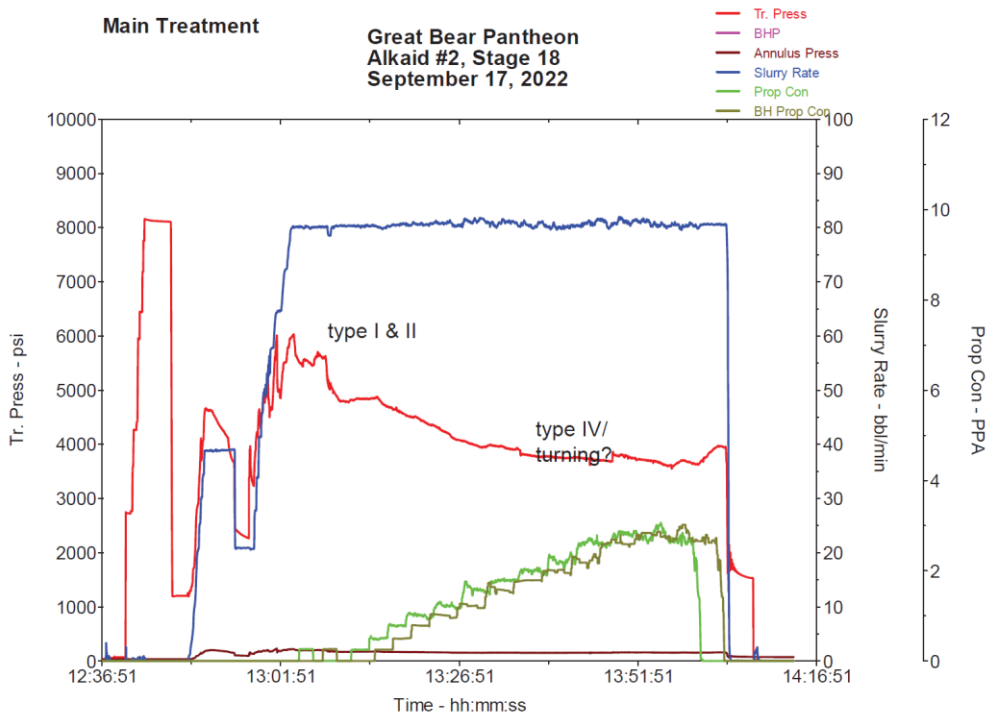
Example Frac Stages: Alkaid - 2

Section 4: STG 9, Treatment Plots



Schlumberger

Section 4: STG 18, Treatment Plots



Schlumberger

Future Frac Designs

- Designs Goal is to Maximize horizontal (Xf) extension to contact a larger drainage Area
    - *Compensate for Height Growth by incorporating growth in design (Target 65 BPFT)*
    - *Maximize placement throughout lateral and minimize sand production during flow back and production cycle of well.*
    - *Provide some Permian Basin examples of this type of fracture treatment*

Future Fracture Designs

- Fluid Volumes
  - *IT IS ESSENTIAL THAT FRAC HEIGHT GROWTH /ROCK PROPERTIES ARE UNDERSTOOD BOTH IN ZONE OF INTEREST AS WELL AS OFFSETTING FORMATIONS*
    - ***Pantheon's first job utilized approximately 33 bbl/ft TO 40 bbls/ft. At these volumes, the treatment was not adequate to deal with frac height and obtain and reasonable frac extension***
      - ***Alkaid Stages 9 & 18 shows signs of frac height growth slowing (achieved max height) and starting to develop some horizontal frac growth (xf)***
    - *Fracture length and heights are created by the volume of water pumped not the amount of sand pumped.*
      - *The biggest limiting factor in fracture extension is the Alkaid 2H was low water volume (bbl/ft) that was pumped in relation to the Frac Height Growth*
      - *A sample pump schedule that was pumped in Permian Basin is illustrated in table.*

- Sand Volumes
  - *Overly aggressive sand size to achieve high conductivity often results in significant sand production during production and can affect the well throughout its early life cycle with expensive cleanouts of both the well bore and production facilities. Predominately the industry has pumped mostly 100 mesh and 40/70*
  - *Just like Pantheon experienced, clean-out issues affect early operations in the Permian Basin, Appalachian Basin(Marcellus and Utica), Haynesville, and Eagle Ford Basin.*
    - *All of these basin initial completions targeted high conductivity (high sand concentrations) and in most cases utilized high rates and gelling agents, including high viscosity friction reducers to place the proppant.*
    - *All the areas experienced premature sand flow back problems and marginal success in keeping well bore clean and continue to deal with sand flow back issues throughout the early well life.*
    - *These basins have gone through multiple evolutions of fracture treatment designs with the single most significant changes involved shifting away from high concentrations of sand, 4 to 5 ppg (with high gell system) to a more manageable 2 to 2.5 ppg slick water system.*

Fracture Stimulation Prognosis

Input by: Company

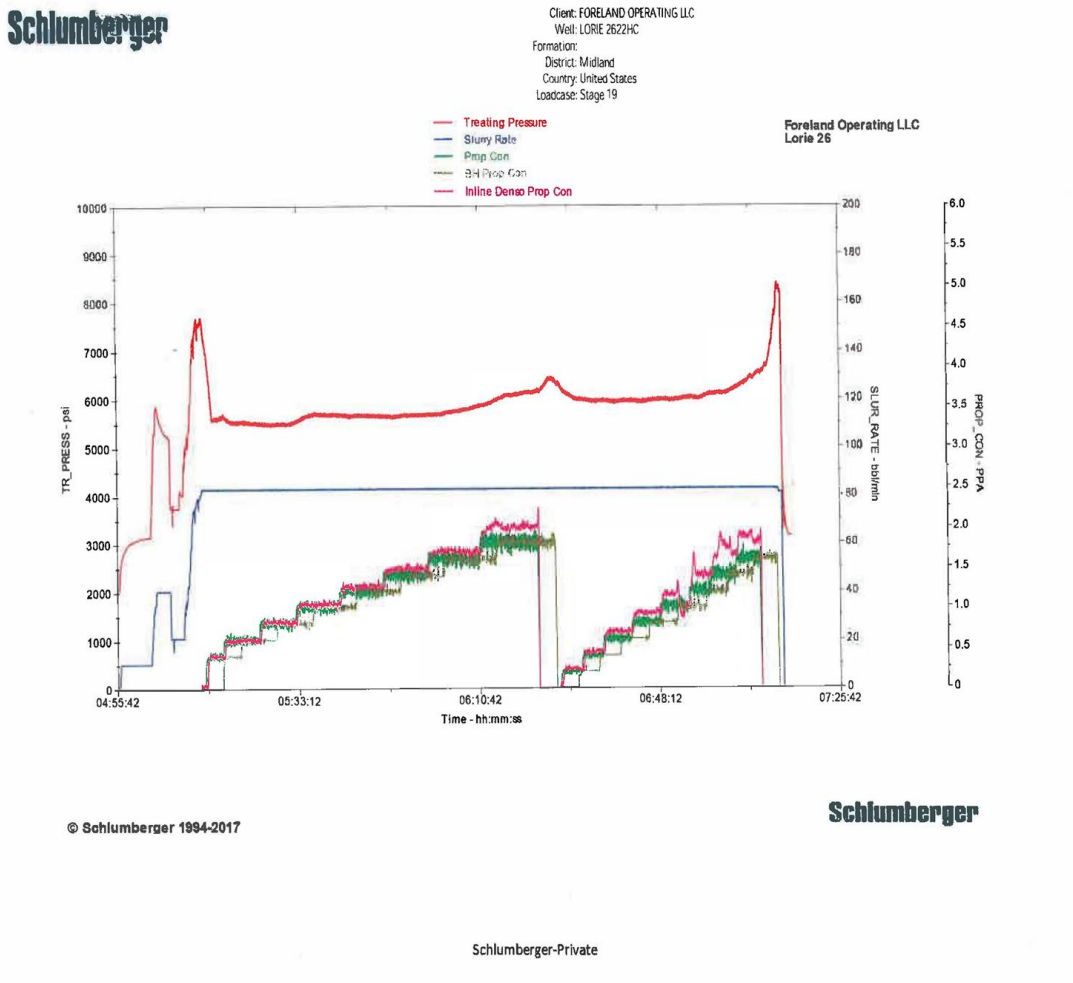
Break Down rate	20
Slick water rate:	80
acid pump rate	20

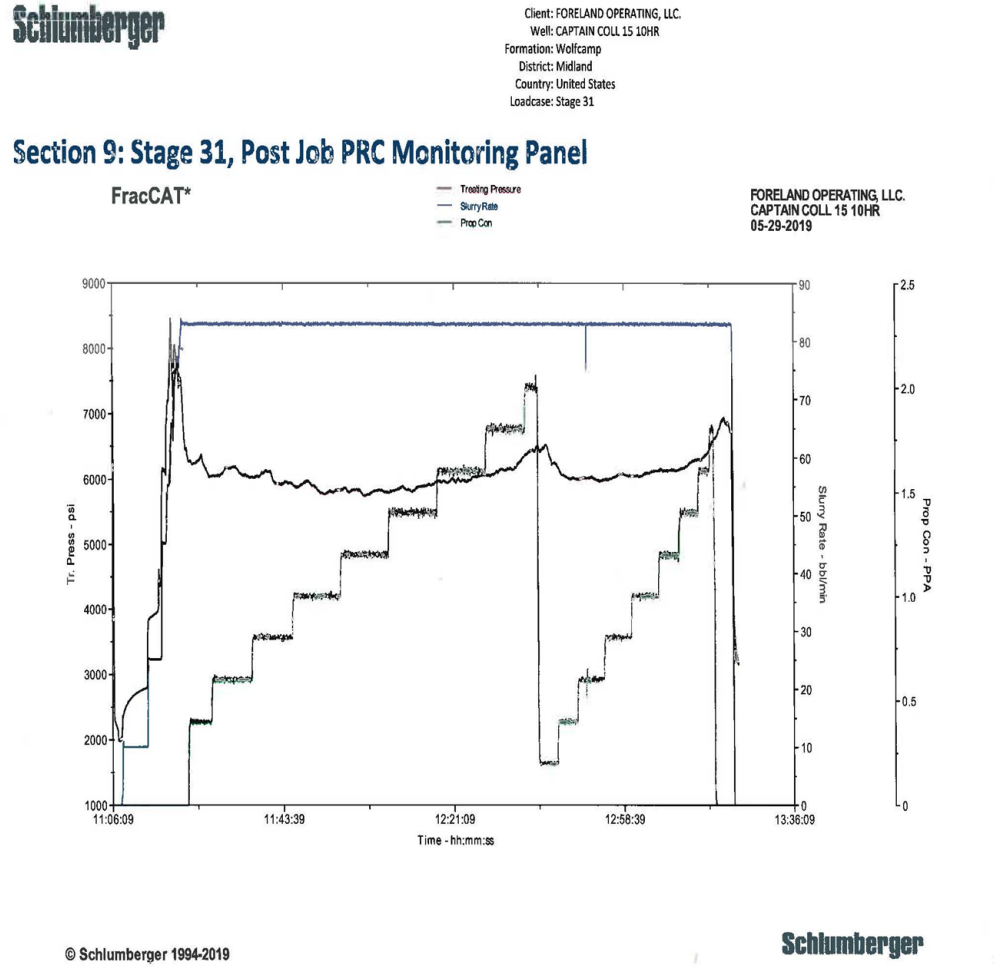
Job Procedure

1 - 42

			Fluid Volumes		Proppant Details				Time Details				
#	Stage Name	Fluid System	Stage	Cumulative	Proppant Type	Stage	Cumulative	Concentration	Stage	Cumulative	Rate		Stage
1	Break Down	Slickwater	7,500 gal	7,500 gal		0 lb	0 lb		2.2 mins	2.2	80	bpm	179 bbls
2	15% Acid	15% HCl	2,000 gal	9,500 gal		0 lb	0 lb		2.4 mins	4.6	20	bpm	48 bbls
3	pad	Slickwater	15,000 gal	24,500 gal	100 Mesh	0 lb	0 lb		4.5 mins	9.1	80	bpm	357 bbls
4	Slickwater Pad	Slickwater	17,500 gal	42,000 gal	100 Mesh	7,000 lb	7000 lb	0.40 ppg	5.2 mins	14.3	80	bpm	417 bbls
5	Slickwater Pad	Slickwater	30,000 gal	72,000 gal	100 Mesh	18,000 lb	25,000 lb	0.60 ppg	8.9 mins	23.2	80	bpm	714 bbls
6	Slickwater Pad	Slickwater	30,000 gal	102,000 gal	100 Mesh	24,000 lb	49,000 lb	0.80 ppg	8.9 mins	32.1	80	bpm	714 bbls
7	Slickwater Pad	Slickwater	35,000 gal	137,000 gal	100 Mesh	35,000 lb	84,000 lb	1.00 ppg	10.4 mins	42.6	80	bpm	833 bbls
8	Slickwater Pad	Slickwater	35,000 gal	172,000 gal	100 Mesh	42,000 lb	126,000 lb	1.20 ppg	10.4 mins	53.0	80	bpm	833 bbls
9	Slickwater Pad	Slickwater	35,000 gal	207,000 gal	100 Mesh	49,000 lb	175,000 lb	1.40 ppg	10.4 mins	63.4	80	bpm	833 bbls
10	Slickwater Pad	Slickwater	35,000 gal	242,000 gal	100 Mesh	63,000 lb	238,000 lb	1.80 ppg	10.4 mins	73.8	80	bpm	833 bbls
11	Slickwater Pad	Slickwater	35,000 gal	277,000 gal	100 Mesh	70,000 lb	308,000 lb	2.00 ppg	10.4 mins	84.2	80	bpm	833 bbls
12	Slickwater Pad	Slickwater	gal	277,000 gal	40/70	0 lb	308,000 lb	0.00	0.0 mins	84.2	80	bpm	0 bbls
13	Slickwater Pad	Slickwater	15,000 gal	292,000 gal	40/70	3,000 lb	311,000 lb	0.20	4.5 mins	88.7	80	bpm	357 bbls
14	Slickwater Pad	Slickwater	15,000 gal	307,000 gal	40/70	6,000 lb	317,000 lb	0.40 ppg	4.5 mins	93.2	80	bpm	357 bbls
15	Slickwater Pad	Slickwater	20,000 gal	327,000 gal	40/70	12,000 lb	329,000 lb	0.60 ppg	6.0 mins	99.1	80	bpm	476 bbls
16	Slickwater Pad	Slickwater	20,000 gal	347,000 gal	40/70	16,000 lb	345,000 lb	0.80 ppg	6.0 mins	105.1	80	bpm	476 bbls
17	Slickwater Pad	Slickwater	20,000 gal	297,000 gal	40/70	20,000 lb	365,000 lb	1.00 ppg	6.0 mins	111.0	80	bpm	476 bbls
18	Slickwater Pad	Slickwater	15,000 gal	312,000 gal	40/70	18,000 lb	383,000 lb	1.20 ppg	4.5 mins	115.5	80	bpm	357 bbls
19	Slickwater Pad	Slickwater	15,000 gal	327,000 gal	40/70	24,000 lb	407,000 lb	1.60 ppg	4.5 mins	119.9	80	bpm	357 bbls
20	Slickwater Pad	Slickwater	15,000 gal	342,000 gal	40/70	27,000 lb	434,000 lb	1.80 ppg	4.5 mins	124.4	80	bpm	357 bbls
21	Flush	Slickwater	18,000 gal	360,000 gal	`	0 lb	434,000 lb	ppg	5.4 mins	129.8	80	bpm	429 bbls
22	pump down	Slickwater	15,000 gal	375,000 gal	`	0 lb	434,000 lb	ppg	4.5 mins	134.2	80	bpm	357 bbls
	Total		445,000 gal			434,000 lb		10,595 bbls	134 mins			bpm	10,595

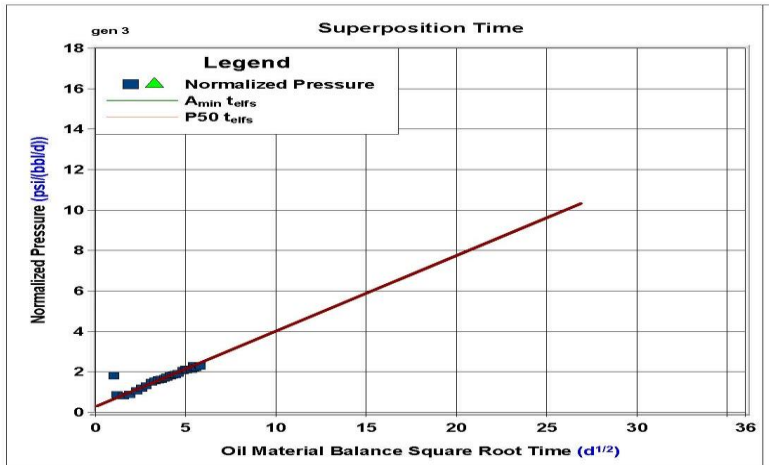
Example Frac Stages: Midland Basin Comparison

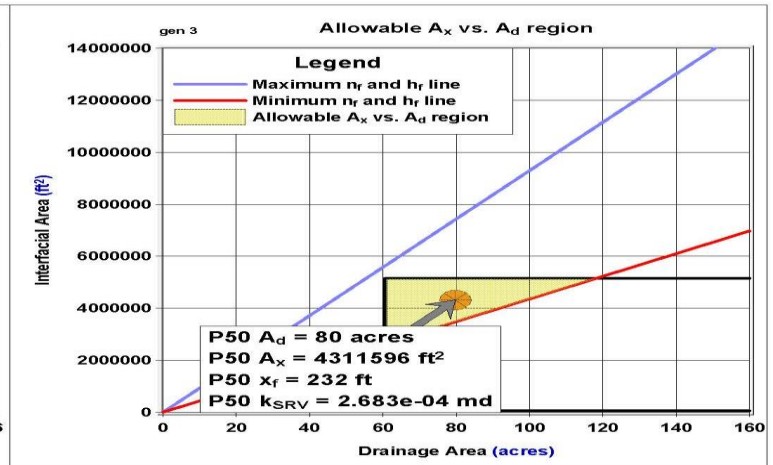


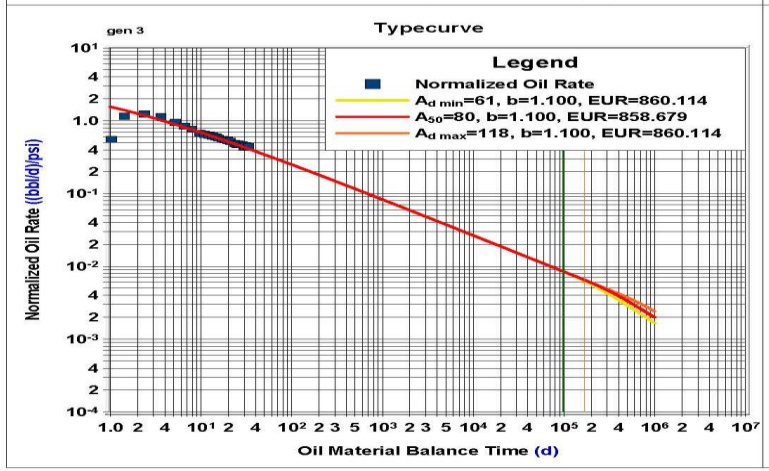


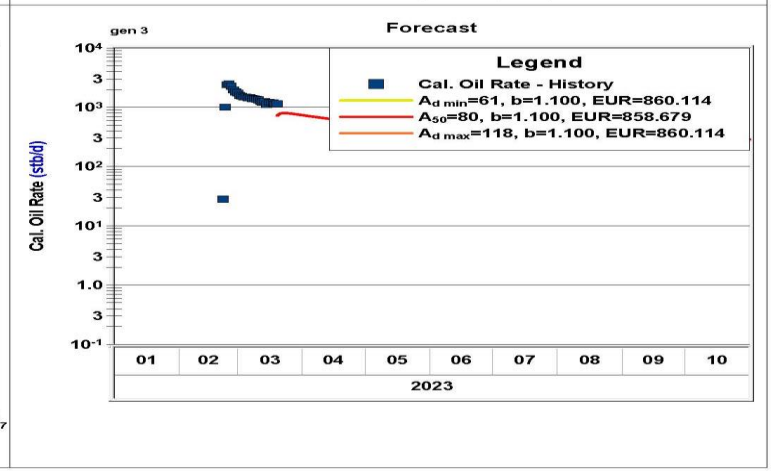
Material Balance of Improved Fracture Treatment –Alkaid 2

gen 3
UR-OST









Superposition Time Options

Multiphase (Pseudo-Pressure) (Beta)
GeoMechanical

Forecast Parameters

A_{min}	61	acres
b	1.100	
$(q_o)_f$	47.3	stb/d
Start Date	03/20/2023	MM/DD/YYYY
Δt	300.0	month
End Date	03/19/2048	MM/DD/YYYY
p_{wff}	1181.74	psi(a)

Input Parameters

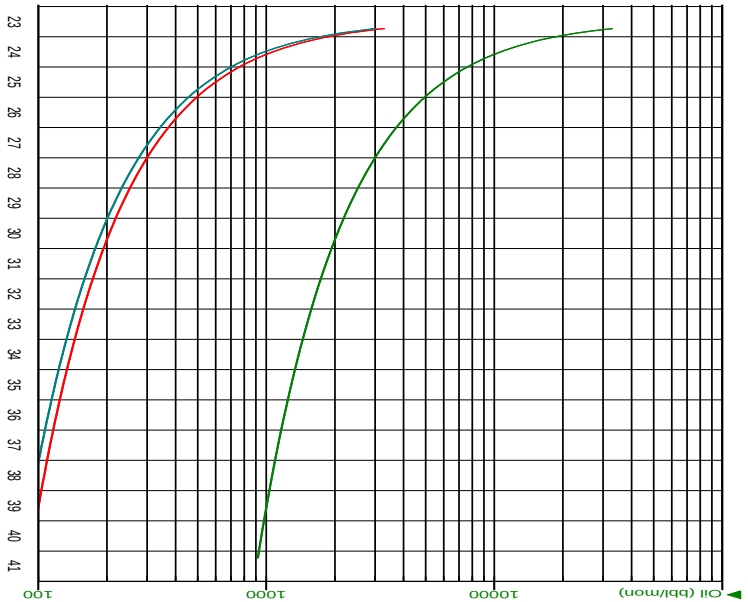
Model Type	Hz - Multi Frac - SRV	
L_e	7500.0	ft
y_e	10000.0	ft
Max A_d	1722	acres
$(k_{SRV})_{min}$	2.000e-04	md
$(k_{SRV})_{max}$	2.000	md
$(n_f)_{min}$	25	
$(n_f)_{max}$	32	
$(h_f)_{min}$	150	ft
$(h_f)_{max}$	250	ft

Calculations

$A_c k_{SRV}^{1/2}$	72789.681	$md^{1/2}ft^2$
$A_c k_{SRV(Abs)}^{1/2}$	195630.062	$md^{1/2}ft^2$
$x_{f\ total}\ k_{SRV}^{1/2}$	27.996	$md^{1/2}ft$
$x_{f\ total}\ k_{SRV(Abs)}^{1/2}$	75.242	$md^{1/2}ft$
P50 A_x	4311596	ft^2
P50 A_d	80	acres
P50 n_f	28	
P50 h_f	171.21	ft
P50 x_f	232	ft
P50 k_{SRV}	2.683e-04	md
P50 F_{CD}'	860.5	
P50 t_{elfs}	168722	d
P50 OOIP	14813.2	Mstb
P50 EUR_o	858.679	Mstb
N_p	38.818	Mstb
P50 RR_o	819.861	Mstb
R^2	0.726	

Comments

Ahpun Field Development Well Modelled Economics



EUR per well	mbbls
Oil	570
Cond/NGL	623
Total	1,193

Initial Investment (millions)	$13.0
PIR (10% DCF)	2.8
Payout (Years)	0.66
IRR	350%

Discount Rate	NPV (millions)
5%	$35.8
8%	$31.2
10%	$28.7
12%	$26.6
15%	$23.9
20%	$20.5

Optimised completion vs Alkaid 2 actual (Incremental well after initial facilities installed)

- *EUR: 1.2 mmbbls vs 0.3 mmbbls,*
- *IP30*: > 1,500 bpd vs 505 bpd (pipeline liquids**)*
- *NPV_{10} at $70/bbl: $29m and $13m well cost*
- *Discounted PIR***: 2.8x IRR: > 300%*

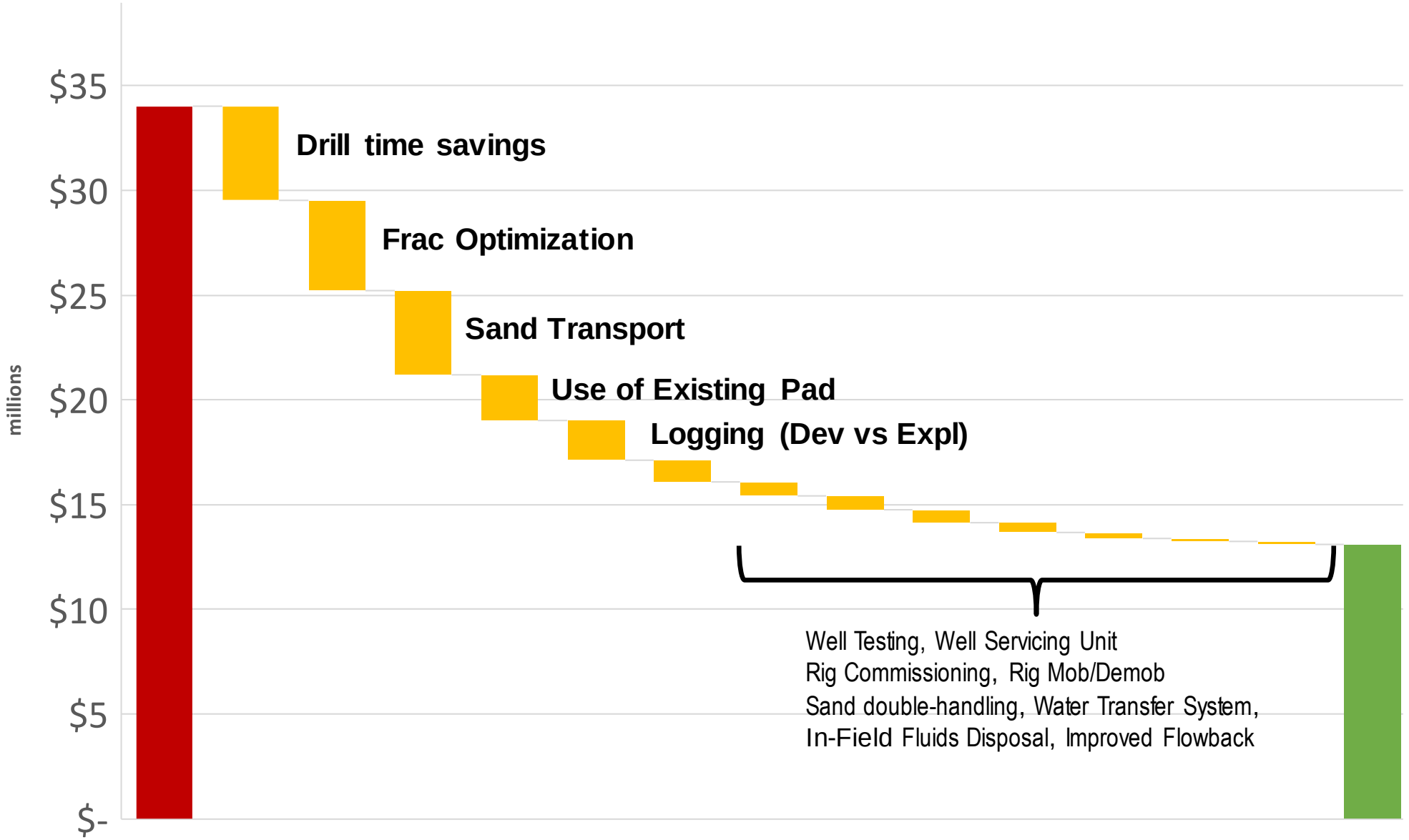
Based on actual Alkaid 2 well performance (decline curve extrapolation and revised completion modeling)

- 2x performance increase expected based on 10,000ft lateral vs 5,000ft at Alkaid 2
- 2-4x performance increase expected based on optimised frac design

**Total IP30 Well Stream expected approx 1,500 bpd and 3-5 mmcfd with 50% Water Cut*

*** Oil, Condensate & NGLs. *** Profit to Investment Ratio*

Development Well Cost – Path to $13m per Well (Company estimates)



Pantheon's North Slope Field Development Assets
Ahpun and Kodiak