

From: Liao, Tony T
Sent: Fri May 07 01:50:44 2010
To: Boyd, Thomas A; Sutton, Wayne L
Cc: Krawietz, Tom
Subject: RE: Mocondo
Importance: Normal
Attachments: PvsRate 5th May_tl.xlsm; Macondo_Flow 5th May.ppt

<<...>> <<...>>

Hi Tom and Wayne,
These are the best I have at hand. We have some updated information today. But the key pieces are here. I'll check with my manger tomorrow to know more about the update and we'll let you know if we should send you the updated version.

Please let me know if you have any questions.

Best regards,

Tony T. Liao, Ph.D.
BP America, Inc., Houston
(Office) +1 281 504 6571
EPT, Base Management, Technology Specialist Support Team

From: Boyd, Thomas A
Sent: Thursday, May 06, 2010 8:24 PM
To: Liao, Tony T
Cc: Krawietz, Tom
Subject: RE: Mocondo

Hi Tony

I never got anything from you. Just wanted to make sure you had my email address.

Thanks

Tom Boyd

From: Mason, Mike C
Sent: Thursday, May 06, 2010 5:33 AM
To: Liao, Tony T
Cc: Boyd, Thomas A; Sutton, Wayne L
Subject: Mocondo

Tony,

Send these guys the best data we have for temperature and pressure gradients

Mike Mason PE

Vice President, Base Management
BP Exploration & Production Technology

Contact Details

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Cell - 713 301 3745

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XAK004-078229

TREX 011136.0001





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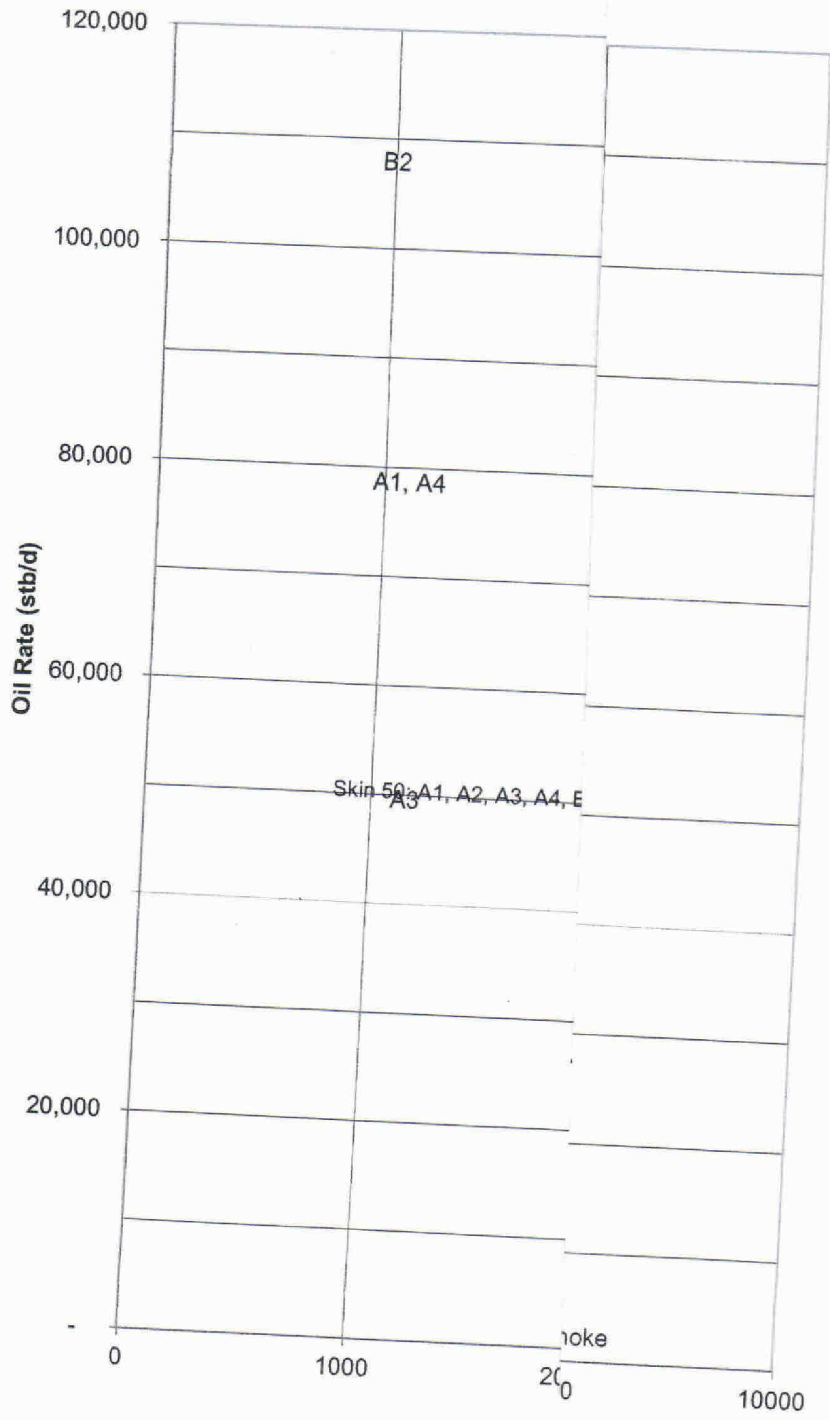
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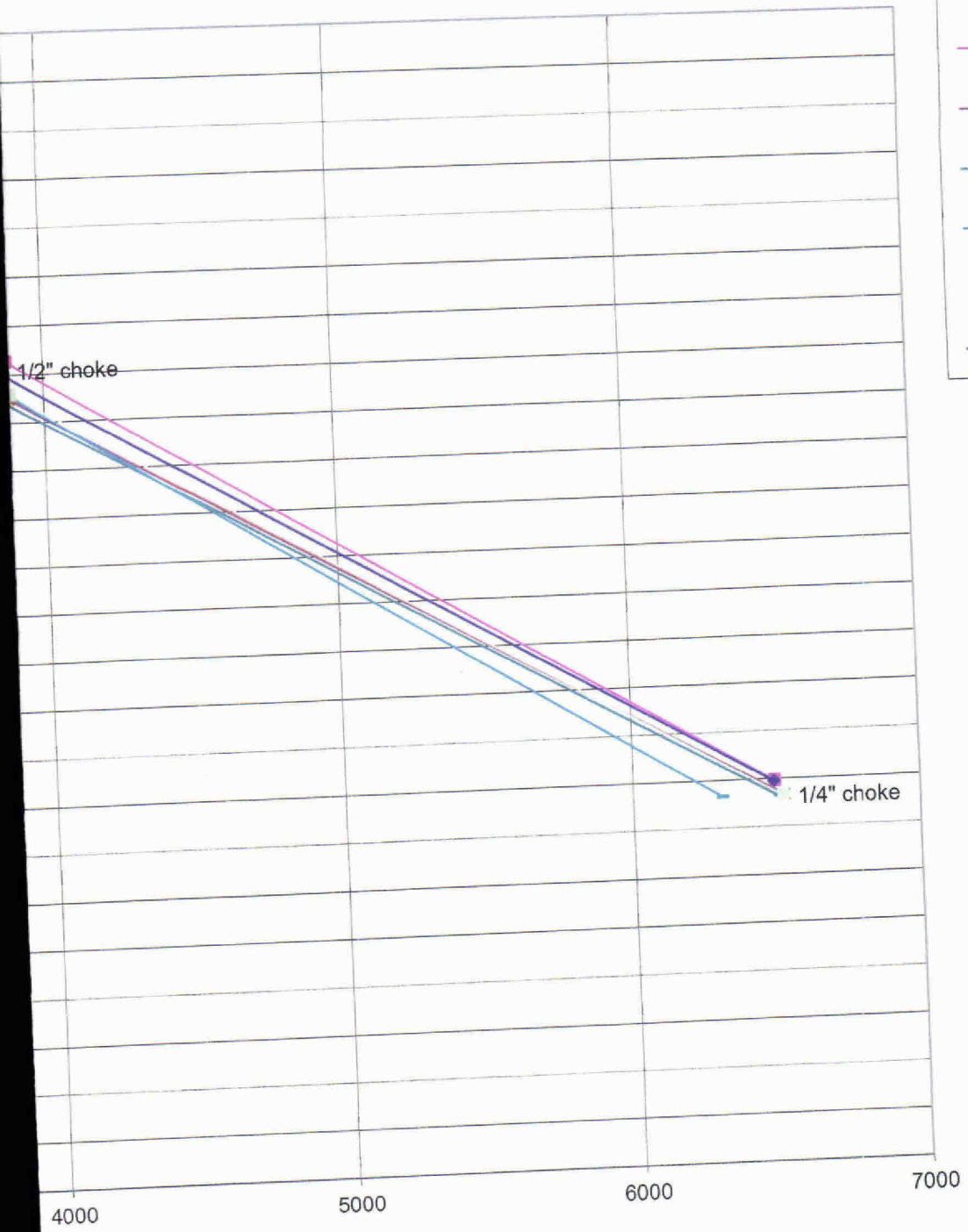






- A1- Skin 50
- A1-No Skin
- A3-Skin 50
- A3- No Skin
- A4-Skin 50
- A4-No skin
- B1 - Skin 50
- B1 - No skin
- B2 - Skin 50
- B2- No skin
- B3 - Skin 50
- B3 - No Skin
- A2 - Skin 50
- A2 - No Skin

ay 88')



- A1-Skin 50
- A3-Skin 50
- A4-Skin 50
- B1-Skin 50
- B2-Skin 50
- B3-Skin 50
- A2-Skin 50

Situation A1

| 50 Skin - 10 ft pay open | | 0 Skin - 88 ft pay open | |
|--------------------------|-------|-------------------------|-------|
| P | Rate | P | Rate |
| No choke | 2270 | 51,899 | 2270 |
| 0.5 | 3,877 | 9,169 | 8374 |
| 0.25 | 6,527 | 8666 | 2,374 |

| 25 Skin - 10 ft pay open | | 10 Skin - 88 ft pay open | |
|--------------------------|------|--------------------------|------|
| P | Rate | P | Rate |
| No choke | 2270 | | |
| 0.5 | | | |
| 0.25 | | | |

Situation A2

| 50 Skin - 10 ft pay open | | 0 Skin - 88 ft pay open | |
|--------------------------|------|-------------------------|-------|
| P | Rate | P | Rate |
| No choke | 2270 | 5512 | 27229 |
| 0.5 | 3824 | 4277 | 8043 |
| 0.25 | 6490 | 1989 | 8756 |

| 25 Skin - 10 ft pay open | | 10 Skin - 88 ft pay open | |
|--------------------------|------|--------------------------|------|
| P | Rate | P | Rate |
| No choke | 2270 | | |
| 0.5 | | | |
| 0.25 | | | |

Situation A3

| 50 Skin - 10 ft pay open | | 0 Skin - 88 ft pay open | |
|--------------------------|-------|-------------------------|--------|
| P | Rate | P | Rate |
| No choke | 2270 | 5,645 | 48,700 |
| 0.5 | 3,871 | 4,317 | 9,630 |
| 0.25 | 6,483 | 1,990 | 2,500 |

| 25 Skin - 10 ft pay open | | 10 Skin - 88 ft pay open | |
|--------------------------|------|--------------------------|------|
| P | Rate | P | Rate |
| No choke | 2270 | | |
| 0.5 | | | |
| 0.25 | | | |

Situation A4

| 50 Skin - 10 ft pay open | | 0 Skin - 88 ft pay open | |
|--------------------------|-------|-------------------------|--------|
| P | Rate | P | Rate |
| No choke | 2270 | 5,488 | 51,899 |
| 0.5 | 3,877 | 4,123 | 8,374 |
| 0.25 | 6,527 | 1,914 | 8,666 |

| 25 Skin - 10 ft pay open | | 10 Skin - 88 ft pay open | |
|--------------------------|------|--------------------------|------|
| P | Rate | P | Rate |
| No choke | 2270 | | |
| 0.5 | | | |
| 0.25 | | | |

Situation B1

| | 50 Skin - 10 ft pay open | 0 Skin - 88 ft pay open |
|------|--------------------------|-------------------------|
| P | 2270 | 2270 |
| Rate | 5,359 | 34,717 |
| | 3,843 | 8,989 |
| | 6,507 | 2,369 |

| | 50 Skin - 10 ft pay open | 0 Skin - 88 ft pay open |
|------|--------------------------|-------------------------|
| P | 2270 | 2270 |
| Rate | 3,831 | 8,484 |
| | 6,311 | 8,662 |
| | 5,473 | 9,268 |
| | 4,182 | 2,380 |
| | 1,915 | |

Situation B2

| | 50 Skin - 10 ft pay open | 0 Skin - 88 ft pay open |
|------|--------------------------|-------------------------|
| P | 2270 | 2270 |
| Rate | 3,831 | 8,484 |
| | 6,311 | 8,662 |
| | 5,473 | 9,268 |
| | 4,182 | 2,380 |
| | 1,915 | |

| | 50 Skin - 10 ft pay open | 0 Skin - 88 ft pay open |
|------|--------------------------|-------------------------|
| P | 2270 | 2270 |
| Rate | 3,884 | 8,470 |
| | 6,522 | 8,661 |
| | 5,479 | 9,211 |
| | 4,145 | 2,370 |
| | 1,910 | |

Situation B3

| | 50 Skin - 10 ft pay open | 0 Skin - 88 ft pay open |
|------|--------------------------|-------------------------|
| P | 2270 | 2270 |
| Rate | 3,884 | 8,470 |
| | 6,522 | 8,661 |
| | 5,479 | 9,211 |
| | 4,145 | 2,370 |
| | 1,910 | |

| | 50 Skin - 10 ft pay open | 0 Skin - 88 ft pay open |
|------|--------------------------|-------------------------|
| P | 2270 | 2270 |
| Rate | 3,884 | 8,470 |
| | 6,522 | 8,661 |
| | 5,479 | 9,211 |
| | 4,145 | 2,370 |
| | 1,910 | |

Situation B1

| | 50 Skin - 10 ft pay open | 0 Skin - 88 ft pay open |
|------|--------------------------|-------------------------|
| P | 2270 | 2270 |
| Rate | 5,359 | 34,717 |
| | 3,843 | 8,989 |
| | 6,507 | 2,369 |

| | 50 Skin - 10 ft pay open | 0 Skin - 88 ft pay open |
|------|--------------------------|-------------------------|
| P | 2270 | 2270 |
| Rate | 3,831 | 8,484 |
| | 6,311 | 8,662 |
| | 5,473 | 9,268 |
| | 4,182 | 2,380 |
| | 1,915 | |

Situation B2

| | 50 Skin - 10 ft pay open | 0 Skin - 88 ft pay open |
|------|--------------------------|-------------------------|
| P | 2270 | 2270 |
| Rate | 3,831 | 8,484 |
| | 6,311 | 8,662 |
| | 5,473 | 9,268 |
| | 4,182 | 2,380 |
| | 1,915 | |

| | 50 Skin - 10 ft pay open | 0 Skin - 88 ft pay open |
|------|--------------------------|-------------------------|
| P | 2270 | 2270 |
| Rate | 3,884 | 8,470 |
| | 6,522 | 8,661 |
| | 5,479 | 9,211 |
| | 4,145 | 2,370 |
| | 1,910 | |

Situation B3

| | 50 Skin - 10 ft pay open | 0 Skin - 88 ft pay open |
|------|--------------------------|-------------------------|
| P | 2270 | 2270 |
| Rate | 3,884 | 8,470 |
| | 6,522 | 8,661 |
| | 5,479 | 9,211 |
| | 4,145 | 2,370 |
| | 1,910 | |

| | 50 Skin - 10 ft pay open | 0 Skin - 88 ft pay open |
|------|--------------------------|-------------------------|
| P | 2270 | 2270 |
| Rate | 3,884 | 8,470 |
| | 6,522 | 8,661 |
| | 5,479 | 9,211 |
| | 4,145 | 2,370 |
| | 1,910 | |

Situation B1

| | 50 Skin - 10 ft pay open | 0 Skin - 88 ft pay open |
|------|--------------------------|-------------------------|
| P | 2270 | 2270 |
| Rate | 5,359 | 34,717 |
| | 3,843 | 8,989 |
| | 6,507 | 2,369 |

| | 50 Skin - 10 ft pay open | 0 Skin - 88 ft pay open |
|------|--------------------------|-------------------------|
| P | 2270 | 2270 |
| Rate | 3,831 | 8,484 |
| | 6,311 | 8,662 |
| | 5,473 | 9,268 |
| | 4,182 | 2,380 |
| | 1,915 | |

Situation B2

| | 50 Skin - 10 ft pay open | 0 Skin - 88 ft pay open |
|------|--------------------------|-------------------------|
| P | 2270 | 2270 |
| Rate | 3,831 | 8,484 |
| | 6,311 | 8,662 |
| | 5,473 | 9,268 |
| | 4,182 | 2,380 |
| | 1,915 | |

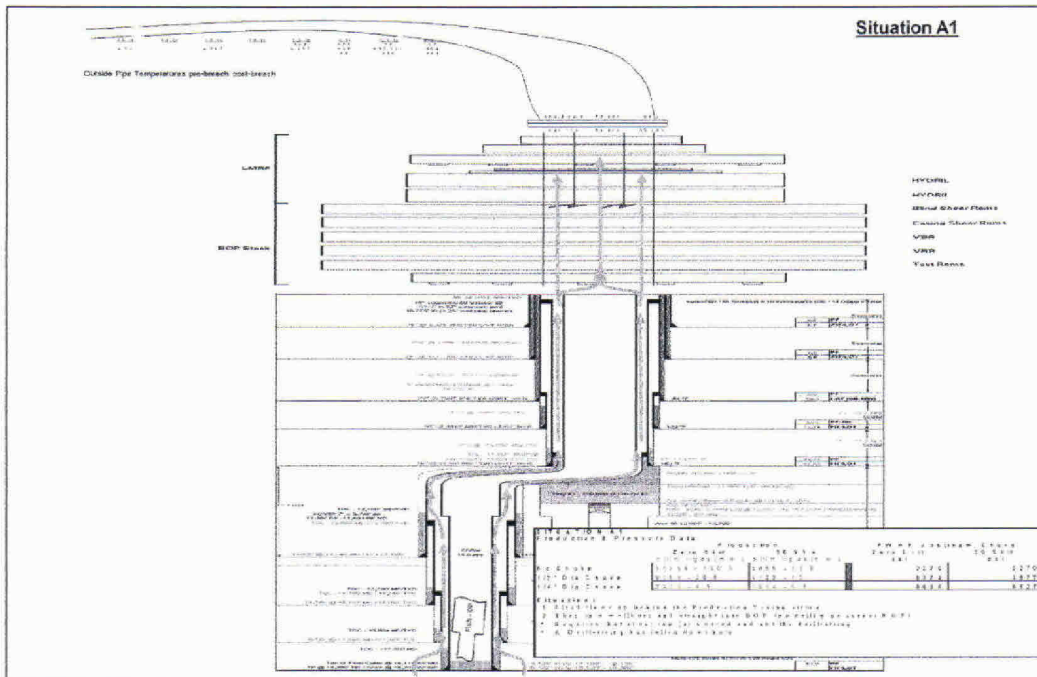
| | 50 Skin - 10 ft pay open | 0 Skin - 88 ft pay open |
|------|--------------------------|-------------------------|
| P | 2270 | 2270 |
| Rate | 3,884 | 8,470 |
| | 6,522 | 8,661 |
| | 5,479 | 9,211 |
| | 4,145 | 2,370 |
| | 1,910 | |

Situation B3

| | 50 Skin - 10 ft pay open | 0 Skin - 88 ft pay open |
|------|--------------------------|-------------------------|
| P | 2270 | 2270 |
| Rate | 3,884 | 8,470 |
| | 6,522 | 8,661 |
| | 5,479 | 9,211 |
| | 4,145 | 2,370 |
| | 1,910 | |

| | 50 Skin - 10 ft pay open | 0 Skin - 88 ft pay open |
|------|--------------------------|-------------------------|
| P | 2270 | 2270 |
| Rate | 3,884 | 8,470 |
| | 6,522 | 8,661 |
| | 5,479 | 9,211 |
| | 4,145 | 2,370 |
| | 1,910 | |



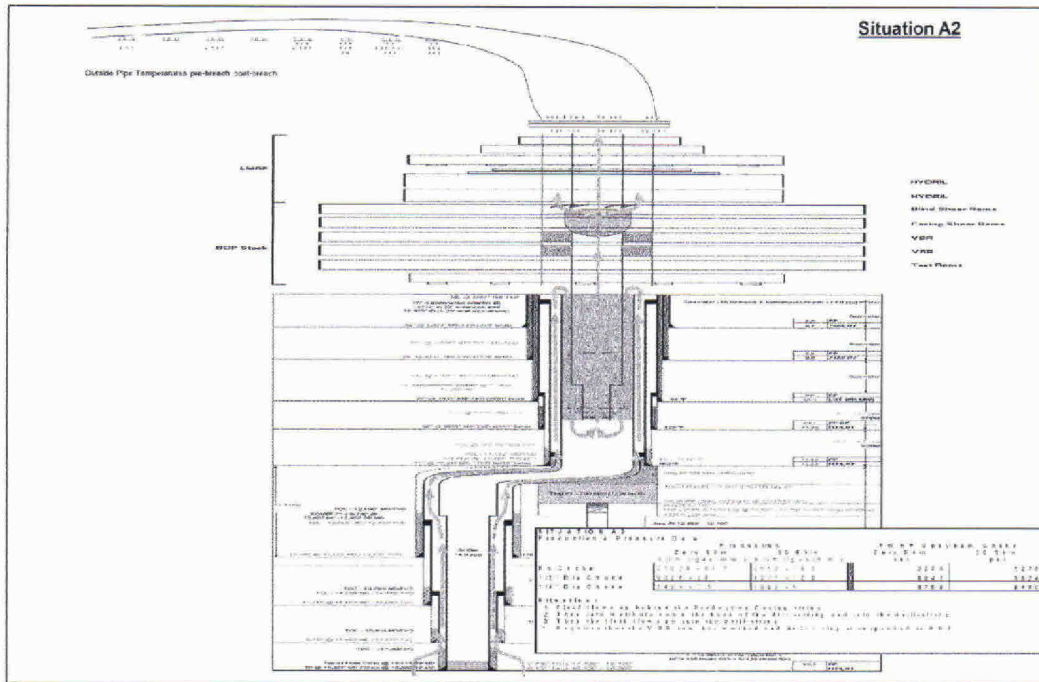


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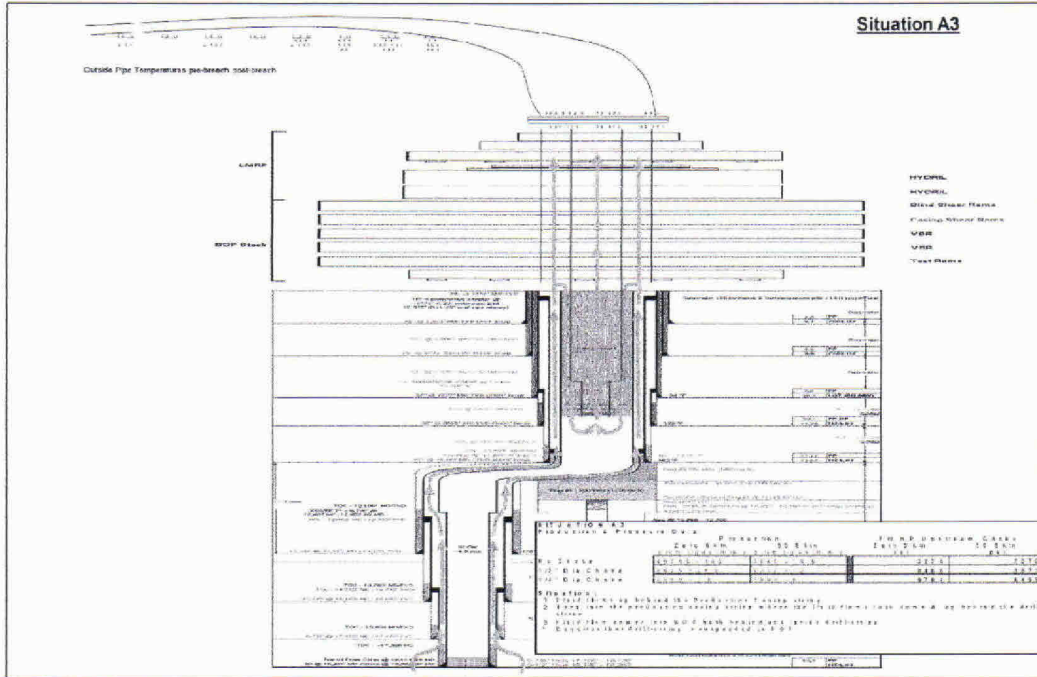


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Situation A3

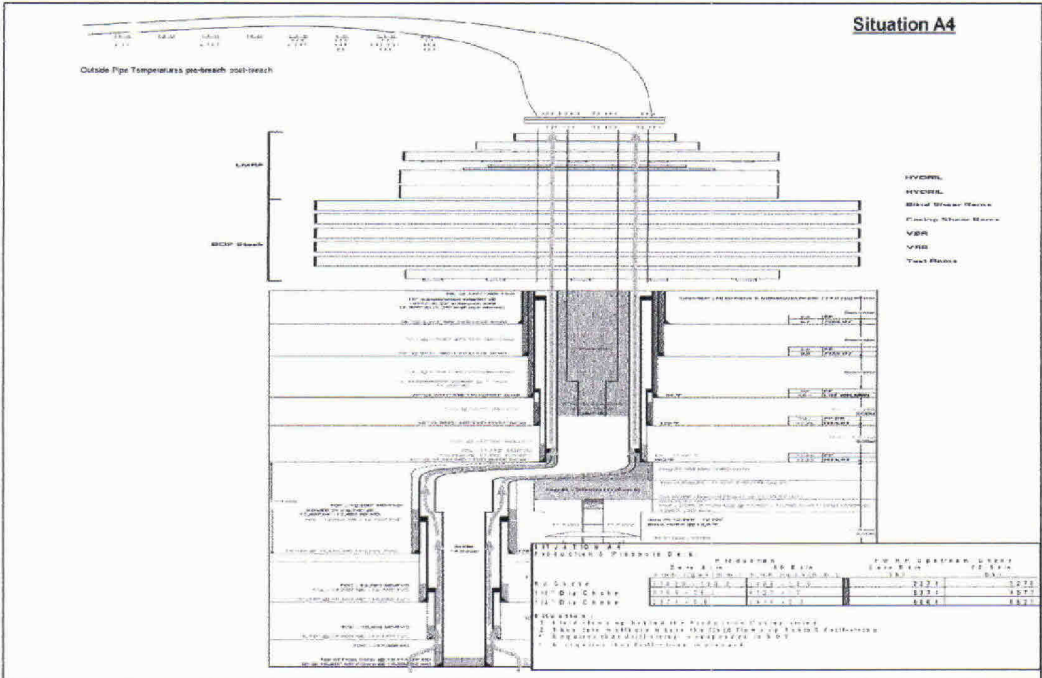


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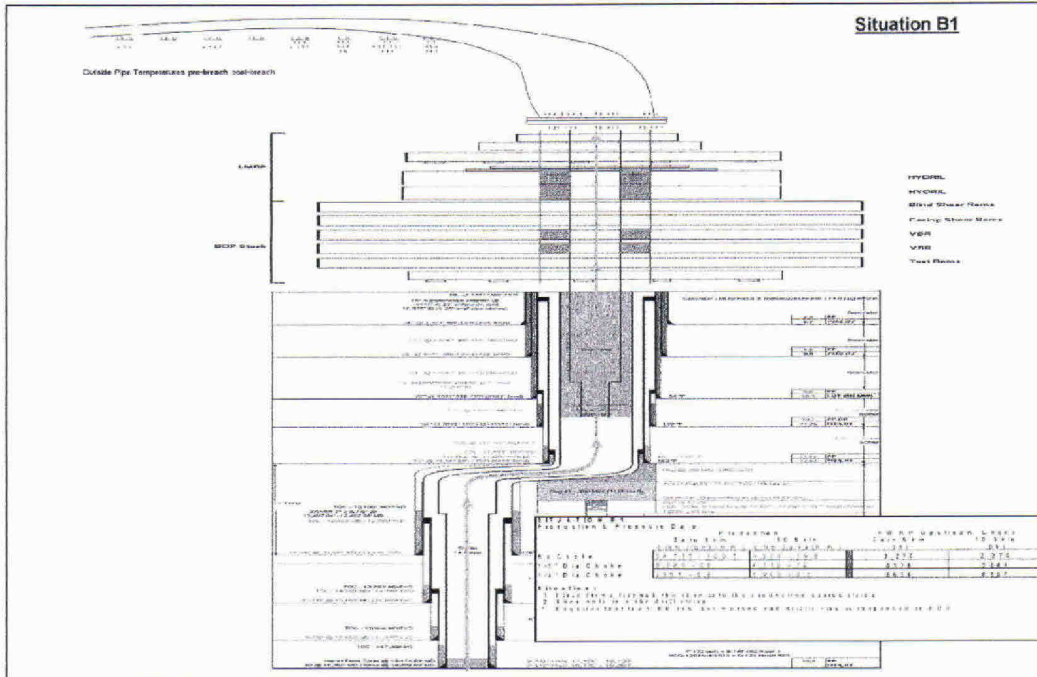
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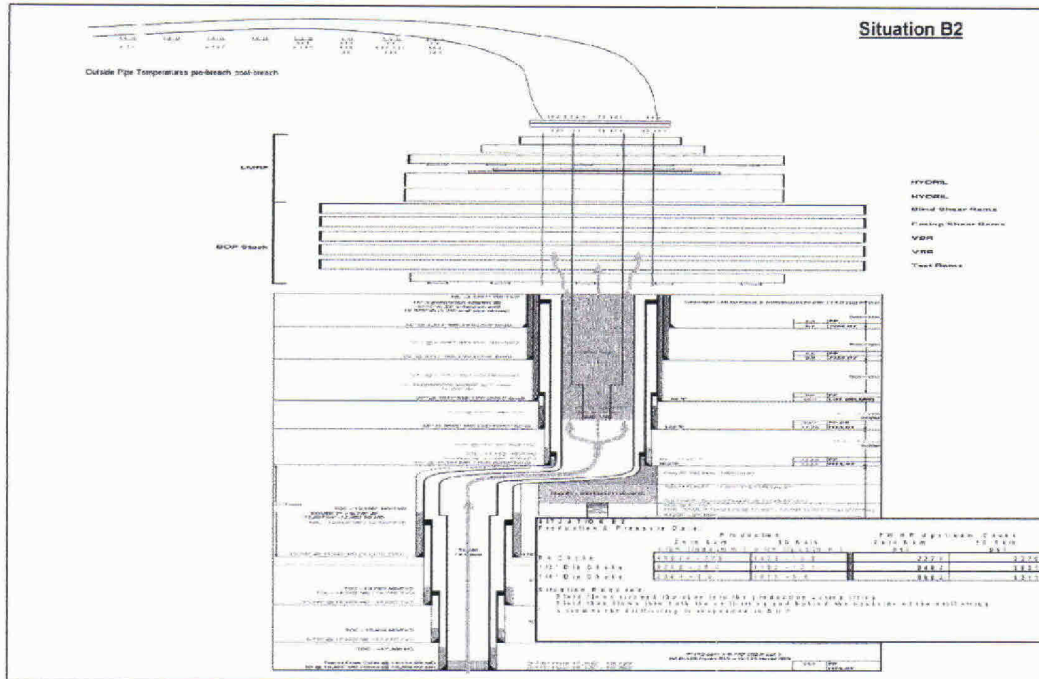


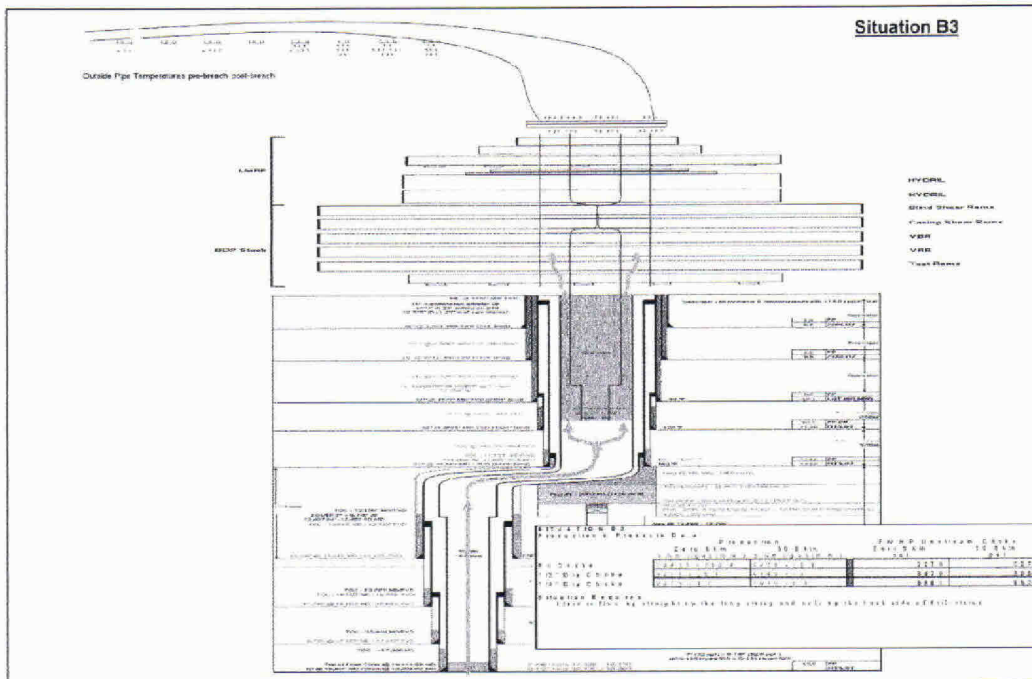
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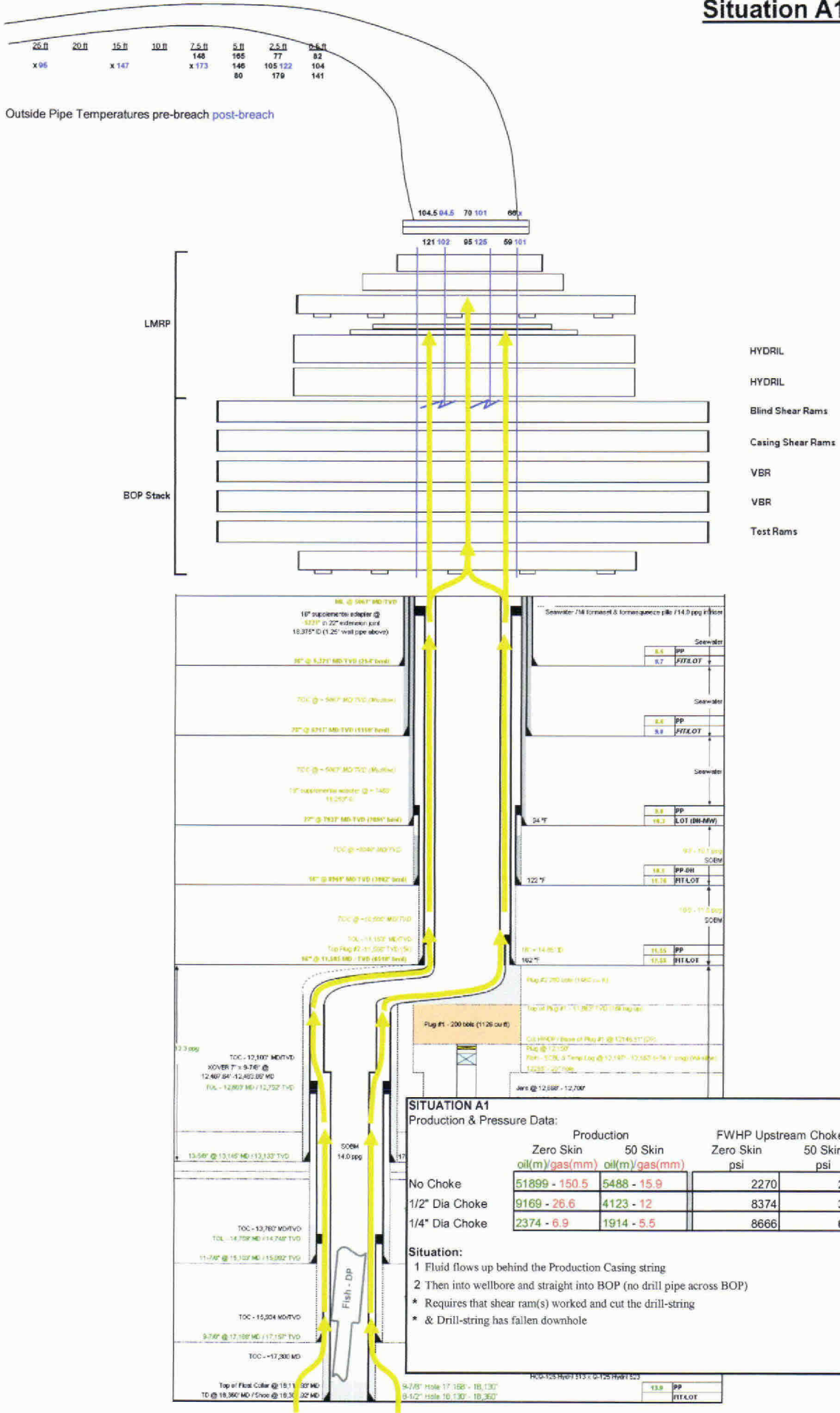
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Situation A1



SITUATION A1
Production & Pressure Data:

| | Production | | FWHP Upstream Choke | |
|----------------|----------------|----------------|---------------------|---------|
| | Zero Skin | 50 Skin | Zero Skin | 50 Skin |
| | oil(m)/gas(mm) | oil(m)/gas(mm) | psi | psi |
| No Choke | 51899 - 150.5 | 5488 - 15.9 | 2270 | 2270 |
| 1/2" Dia Choke | 9169 - 26.6 | 4123 - 12 | 8374 | 3877 |
| 1/4" Dia Choke | 2374 - 6.9 | 1914 - 5.5 | 8666 | 6527 |

Situation:

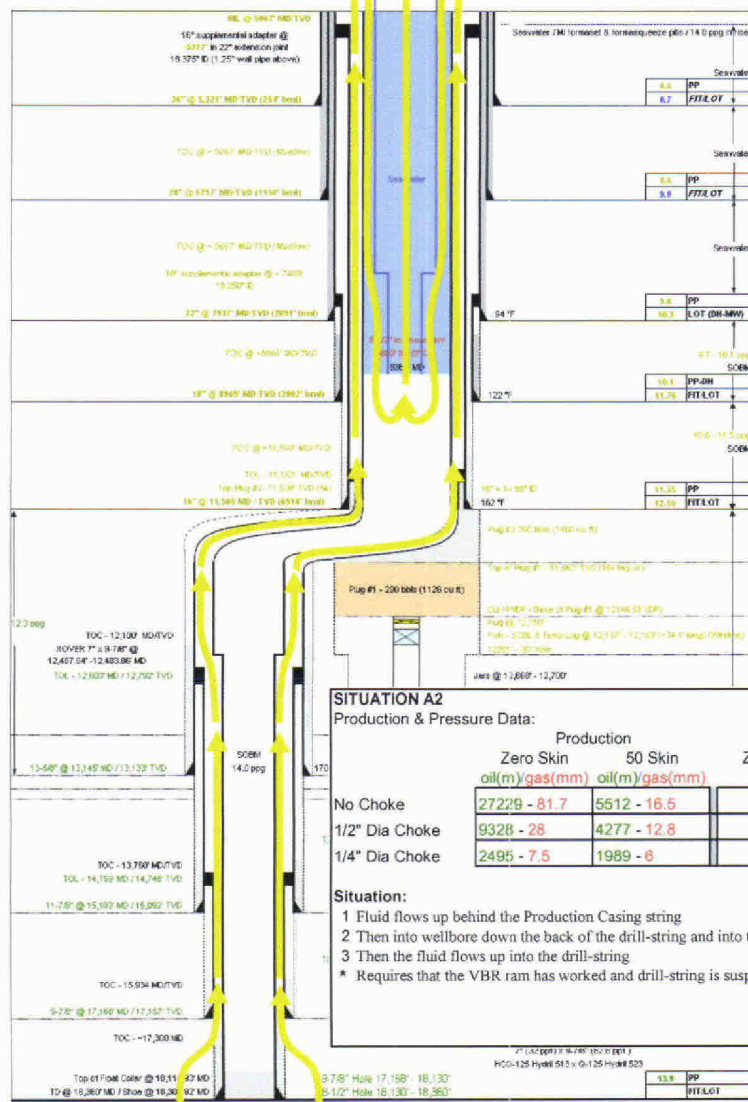
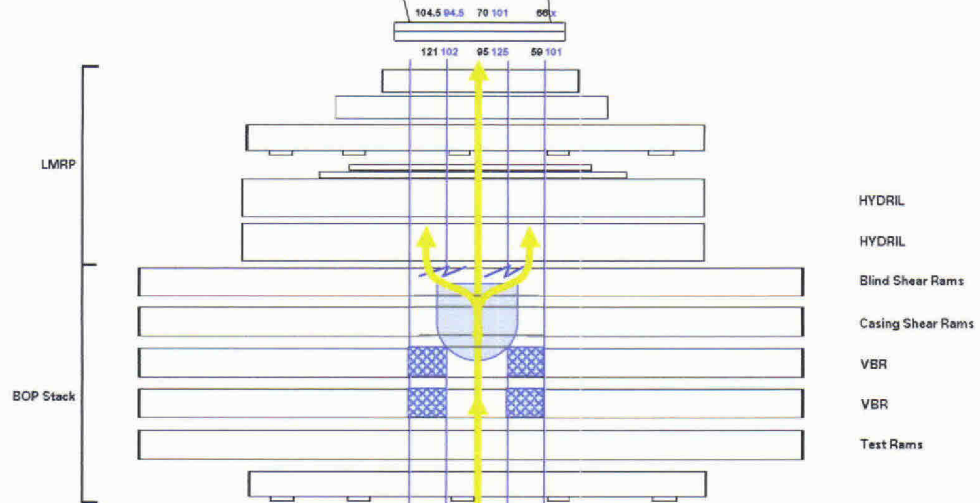
- 1 Fluid flows up behind the Production Casing string
- 2 Then into wellbore and straight into BOP (no drill pipe across BOP)

- * Requires that shear ram(s) worked and cut the drill-string
- * & Drill-string has fallen downhole

Situation A2

| | | | | | | | |
|------|------|-------|------|-------|-----|-------|-------|
| 25.0 | 20.0 | 15.0 | 10.0 | 7.5.0 | 5.0 | 2.5.0 | 0.5.0 |
| x 95 | | x 147 | | x 173 | 144 | 165 | 77 |
| | | | | | 146 | 185 | 122 |
| | | | | | 80 | 179 | 141 |

Outside Pipe Temperatures pre-breach post-breach



SITUATION A2
Production & Pressure Data:

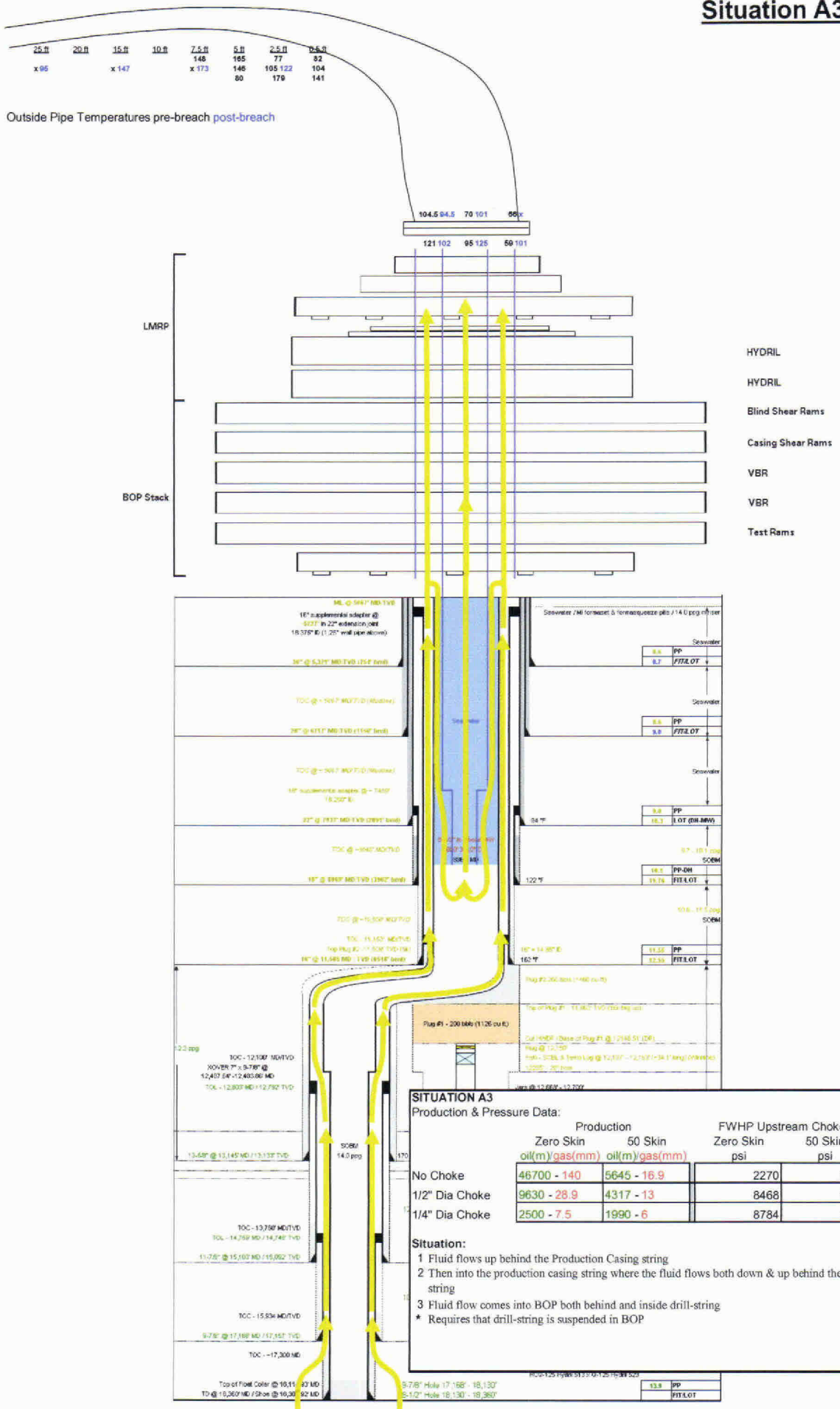
| | Production | | FWHP Upstream Choke | |
|----------------|----------------|----------------|---------------------|---------|
| | Zero Skin | 50 Skin | Zero Skin | 50 Skin |
| | oil(m)/gas(mm) | oil(m)/gas(mm) | psi | psi |
| No Choke | 27229 - 81.7 | 5512 - 16.5 | 2270 | 2270 |
| 1/2" Dia Choke | 9328 - 28 | 4277 - 12.8 | 8043 | 3824 |
| 1/4" Dia Choke | 2495 - 7.5 | 1989 - 6 | 8756 | 6490 |

Situation:

- 1 Fluid flows up behind the Production Casing string
- 2 Then into wellbore down the back of the drill-string and into the drill-string
- 3 Then the fluid flows up into the drill-string

* Requires that the VBR ram has worked and drill-string is suspended in BOP

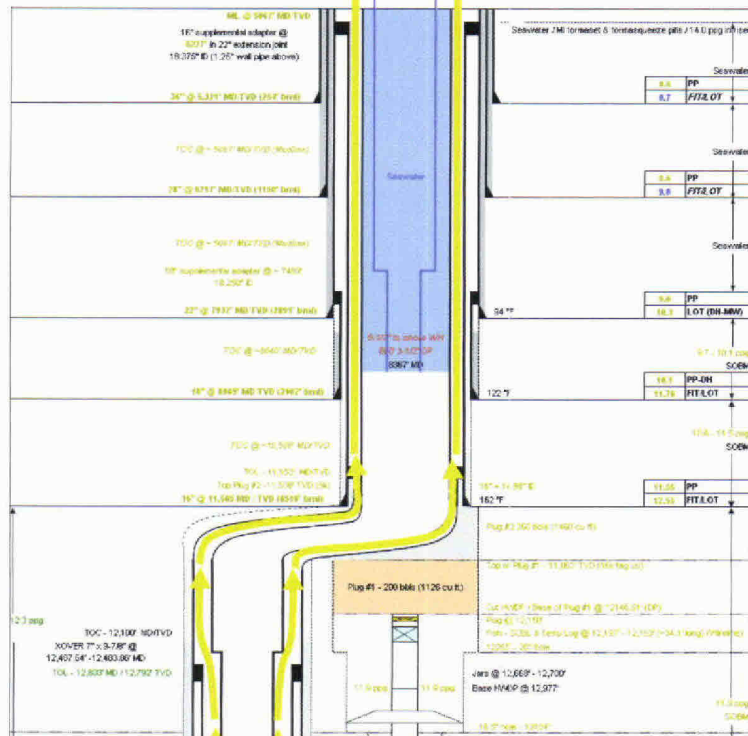
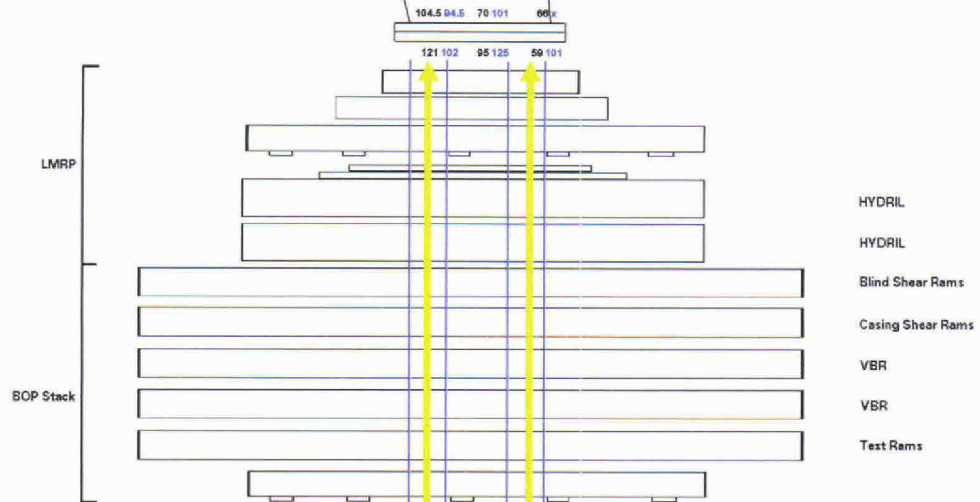
Situation A3



Situation A4

| | | | | | | | |
|-------|-------|-------|-------|--------|------|--------|--------|
| 25 ft | 20 ft | 35 ft | 10 ft | 7.5 ft | 5 ft | 2.5 ft | 0.5 ft |
| x 95 | | x 147 | | x 173 | 146 | 105 | 122 |
| | | | | | 80 | 179 | 141 |

Outside Pipe Temperatures pre-breach post-breach



SITUATION A4
Production & Pressure Data:

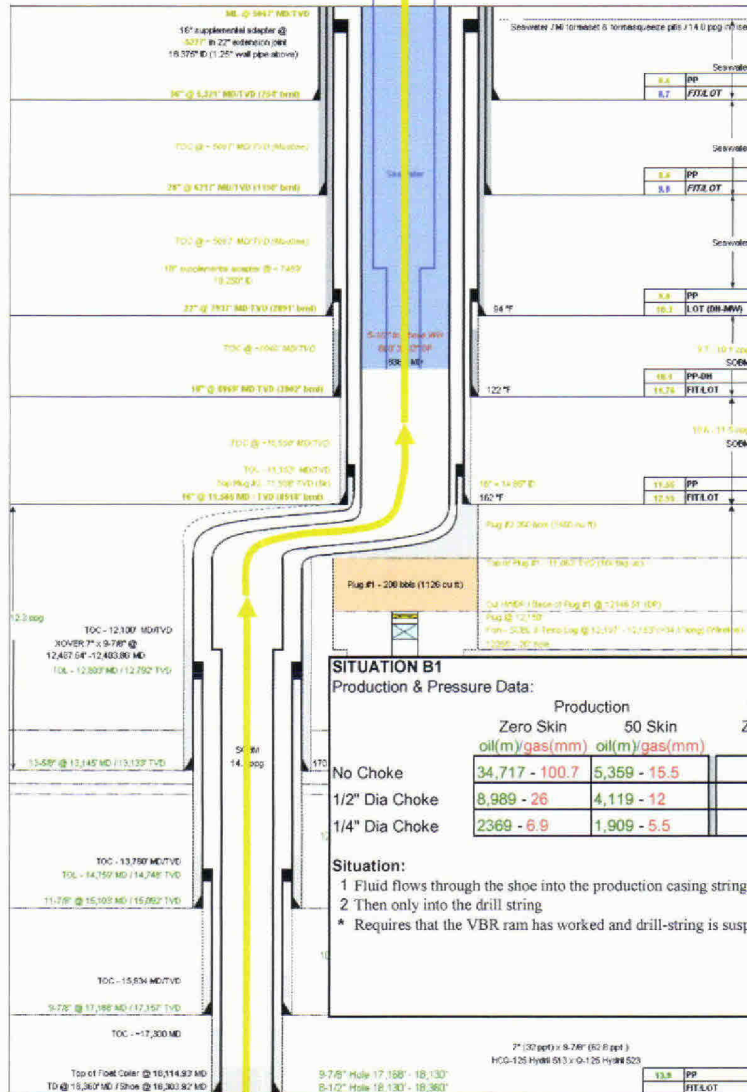
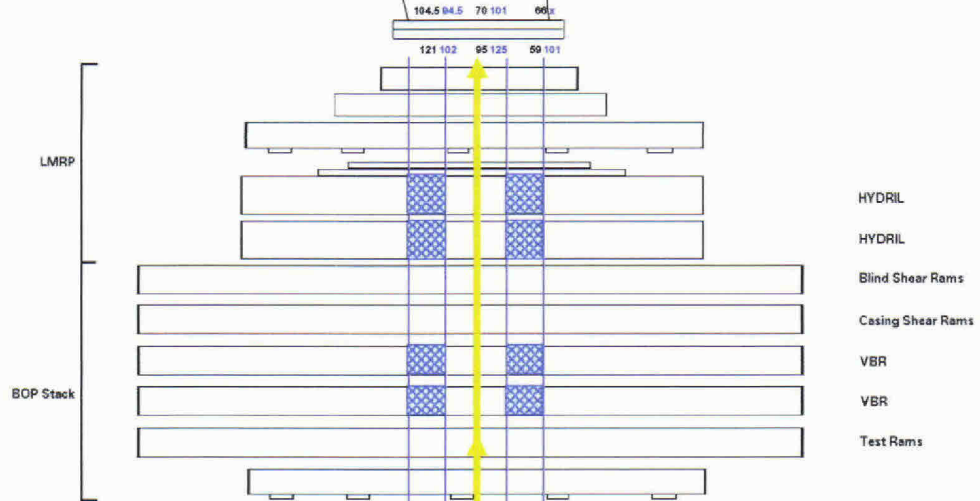
| | Production | | FWHP Upstream Choke | |
|----------------|------------|---------|---------------------|---------|
| | Zero Skin | 50 Skin | Zero Skin | 50 Skin |
| | oil(m) | gas(mm) | psi | psi |
| No Choke | 51859 | - 150.5 | 5488 | - 15.9 |
| 1/2" Dia Choke | 9169 | - 26.6 | 4123 | - 12 |
| 1/4" Dia Choke | 2374 | - 6.9 | 1914 | - 5.5 |

Situation:
 1 Fluid flows up behind the Production Casing string
 2 Then into wellbore where the fluid flows up behind drill-string
 * Requires that drill-string is suspended in BOP
 * & requires that drill-string is plugged

Situation B1

| | | | | | | | |
|-------|-------|-------|-------|--------|------|--------|--------|
| 25 ft | 20 ft | 15 ft | 10 ft | 7.5 ft | 5 ft | 2.5 ft | 0.5 ft |
| x 96 | | x 147 | | x 173 | 148 | 165 | 77 |
| | | | | | 146 | 105 | 122 |
| | | | | | 80 | 179 | 141 |

Outside Pipe Temperatures pre-breach post-breach



SITUATION B1
Production & Pressure Data:

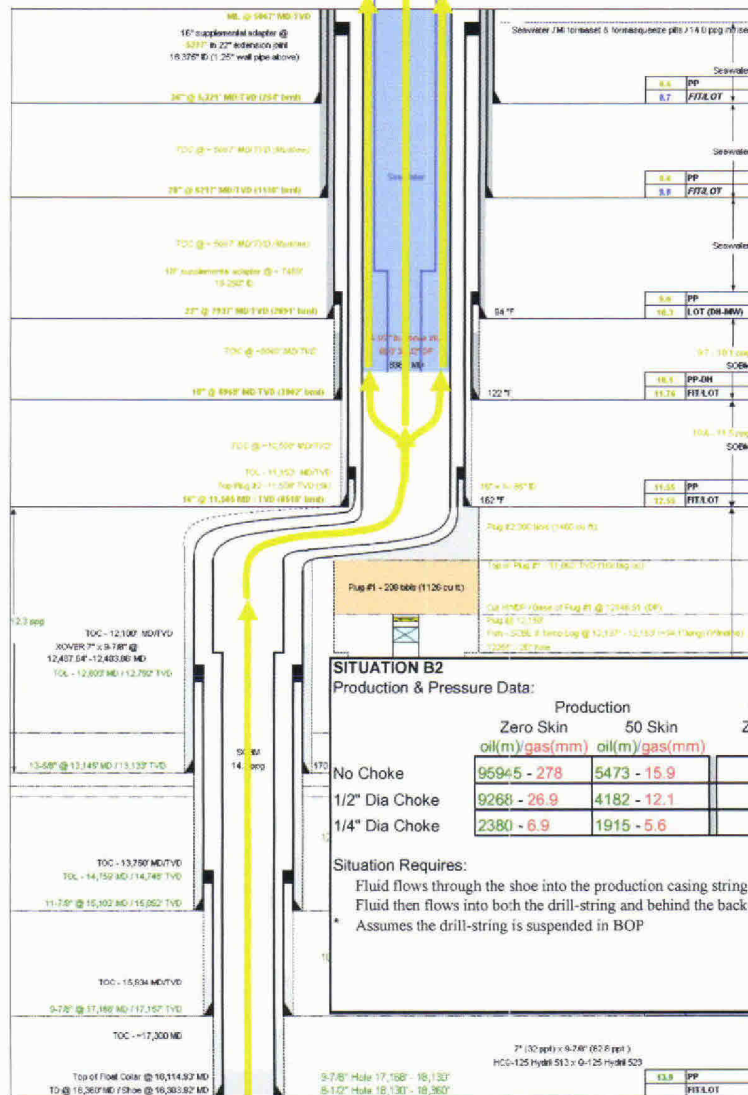
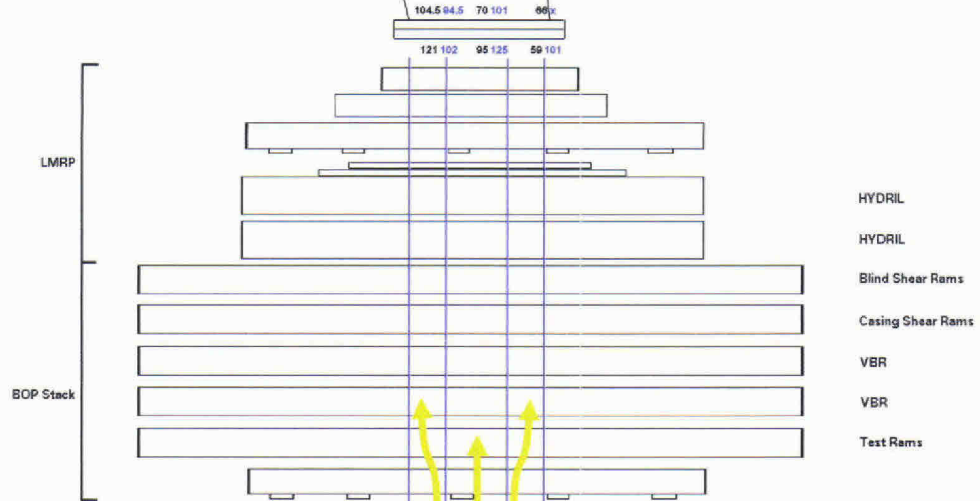
| | Production | | FWHP Upstream Choke | |
|----------------|----------------|----------------|---------------------|---------|
| | Zero Skin | 50 Skin | Zero Skin | 50 Skin |
| | oil(m)/gas(mm) | oil(m)/gas(mm) | psi | psi |
| No Choke | 34,717 - 100.7 | 5,359 - 15.5 | 2,270 | 2,270 |
| 1/2" Dia Choke | 8,989 - 26 | 4,119 - 12 | 8178 | 3843 |
| 1/4" Dia Choke | 2369 - 6.9 | 1,909 - 5.5 | 8636 | 6507 |

Situation:
 1 Fluid flows through the shoe into the production casing string
 2 Then only into the drill string
 * Requires that the VBR ram has worked and drill-string is suspended in BOP

Situation B2

| | | | | | | | |
|-------|-------|-------|-------|--------|------|--------|--------|
| 25 ft | 20 ft | 15 ft | 10 ft | 7.5 ft | 5 ft | 2.5 ft | 0.5 ft |
| x 95 | | x 147 | | x 173 | | x 80 | x 141 |
| | | | | 148 | 165 | 77 | 82 |
| | | | | 146 | 105 | 122 | 104 |
| | | | | 80 | 170 | | 141 |

Outside Pipe Temperatures pre-breach post-breach



Situation B3

