

**From:** Liao, Tony T  
**Sent:** Thu Jul 15 19:46:14 2010  
**To:** Mix, Kurt  
**Cc:** Golson, Kyle L; Mason, Mike C; Hill, Trevor; Merrill, Robert C; Levitan, Michael M.  
**Subject:** FW: BOP Pressure...  
**Importance:** Normal  
**Attachments:** Pressure Measurement Network Architecture 7.15.10.jpg; SIWHP Chart

<<...>>

Kurt,

You must have seen the data and the plot from Matt.

Both of you, please refer to the our latest calculation of the SIWHP pressure which including the ramping down time (about 3 hours). The pressure on our plot is the PT-B on Matt's plot.

Our interpretation is that we are in good place.

The pressure build up between Matt's emails make sense to us too!

Cheers,

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

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**From:** Gochnour, Matt  
**Sent:** Thursday, July 15, 2010 2:34 PM  
**To:** Liao, Tony T  
**Cc:** Gokdemir, Oktay M.  
**Subject:** RE: BOP Pressure...

Tony,

See attached for the pressure measurement network architecture. Let me know if you have any questions.

<<...>>

The well is now shut in. We are monitoring for pressure build. The gauge in the 3 ram stack is reading 6609.38. The first choke turn today was at 12:28.

Regards,

Matt

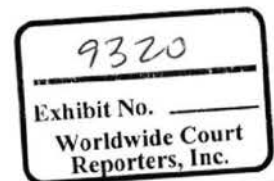
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**From:** Liao, Tony T  
**Sent:** Thursday, July 15, 2010 2:24 PM  
**To:** Gochnour, Matt  
**Cc:** Gokdemir, Oktay M.  
**Subject:** RE: BOP Pressure...

Thanks a million!

This sounds very good news for the moment.

Mind if I ask more?



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BPD568-097798

TREX-009320.0001

TREX 009320.0001

How long you have started ramping down?  
Where is PT-B and where is capping stack gauges located?  
Do you have (or some one has) a schematic that I can have?  
Stop here before you say you are asking too much.

Thanks,

Tony T. Liao, Ph.D.  
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EPT, Base Management, Technology Specialist Support Team

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**From:** Gochmour, Matt  
**Sent:** Thursday, July 15, 2010 2:18 PM  
**To:** Liao, Tony T  
**Cc:** Gokdemir, Oktay M.  
**Subject:** RE: BOP Pressure...

PT-B is presently reading around 7174. The capping stack gauges are reading around 6550.

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**From:** Liao, Tony T  
**Sent:** Thursday, July 15, 2010 2:08 PM  
**To:** Gochmour, Matt  
**Cc:** Gokdemir, Oktay M.  
**Subject:** RE: BOP Pressure...

Please add Metin's name there too.

Thanks!

Any new number at this moment? How long it is shut-in now? We have some model numbers. It would be great to see how far away or how close the current readings are from our model values.

Tony T. Liao, Ph.D.  
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**From:** Gochmour, Matt  
**Sent:** Thursday, July 15, 2010 2:07 PM  
**To:** Liao, Tony T  
**Subject:** RE: BOP Pressure...

I can get you added to processnet to view it.

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**From:** Liao, Tony T  
**Sent:** Thursday, July 15, 2010 2:04 PM  
**To:** Gochmour, Matt  
**Subject:** BOP Pressure...

Hi Matt,

Do you have the updated BOP pressure data? Better yet, do you have the live-feed?

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TREX 009320.0002

TREX-009320.0002

Best regards,  
Tony T. Liao, Ph.D.  
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BPD568-097800

TREX-009320.0003

TREX 009320.0003



From: Gokdemir, Oktay M.  
Sent: Thu Jul 15 19:34:04 2010  
To: Liao, Tony T  
Subject: SIWHP Chart  
Importance: Normal  
Attachments: SIWHP.ZIP

Regards,  
Metin Gokdemir  
Petroleum Engineer,  
501 Westlake Park Blvd.  
Houston, TX 77079  
11.132A  
Office: 281.366.6014  
Cell: [REDACTED]  
Main: 281.366.2000  
Fax: 281.366.5717

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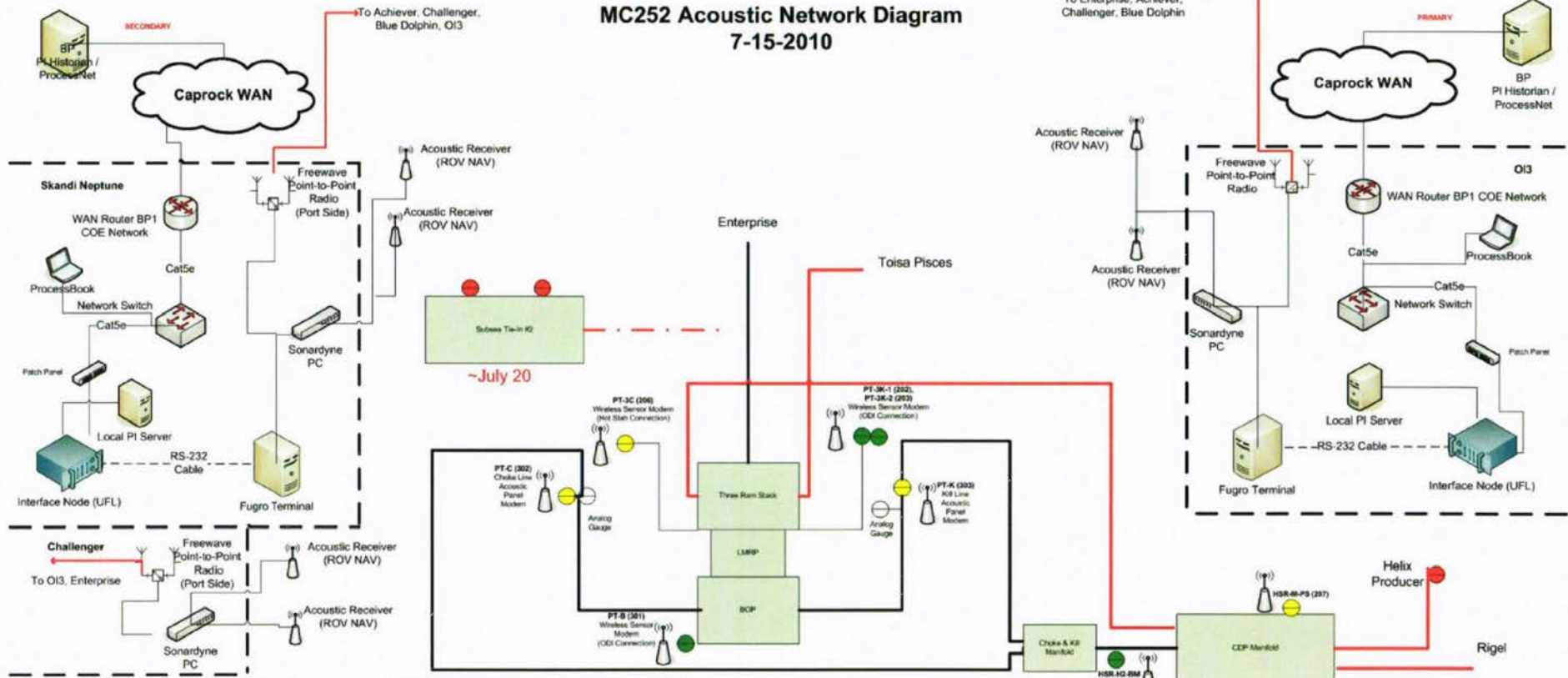
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BPD568-097802

TREX 009320.0005

TREX-009320.0005



# MC252 Acoustic Network Diagram 7-15-2010



Tag	Descriptor	Transducer Serial #	Address	Base Units	Engineering Units	Gain & Offset
PT-B	Pressure before BOP	N/A	301	1-5 VDC	0-20000 psi	
PT-B	Spare acoustic modem for Pressure before BOP	N/A	305	1-5 VDC	0-20000 psi	
PT-C	Choke Line Pressure	99826	302	0-5 VDC	0-20000 psi	Gain = 4455.89, Offset = -2352.81
PT-K	Kill Line Pressure	99837	303	0-5 VDC	0-20000 psi	Gain = 4424.05, Offset = -2199.25
PT-3C	3 Ram Stack Choke Line Pressure	99838	206	0-5 VDC	0-20000 psi	Gain = 4297.70, Offset = -2218.82
	Spare 3 Ram Stack Choke Line Pressure			0-5 VDC	0-20000 psi	
PT-3K-1	3 Ram Stack Kill Line Pressure-1	N/A	202	1-5 VDC	0-15000 psi	
PT-3K-2	3 Ram Stack Kill Line Pressure-1	N/A	203	1-5 VDC	0-15000 psi	FBD
	Spare 3 Ram Stack Kill Line Pressure-1		204	1-5 VDC	0-15000 psi	
	Spare 3 Ram Stack Kill Line Pressure-1		205	0-5 VDC	0-20000 psi	
HSR-M-PS	CDP Manifold Pressure	99834		0-5 VDC	0-20000 psi	
HSR-HQ-8M	Junk Shot Manifold Outlet to CDP Manifold	92983	207	0-5 VDC	0-20000 psi	Gain = 4460.96, Offset = -2367.31
	Spare		208	0-5 VDC	0-20000 psi	
	Spare		209	0-5 VDC	0-20000 psi	
	Spare		210	0-5 VDC	0-20000 psi	
	Spare		211	0-5 VDC	0-20000 psi	
	Spare		212	0-5 VDC	0-20000 psi	
SS2-1	Subsea Te-In Pressure 1					
SS2-2	Subsea Te-In Pressure 2					

### 4-20mA Transmitters

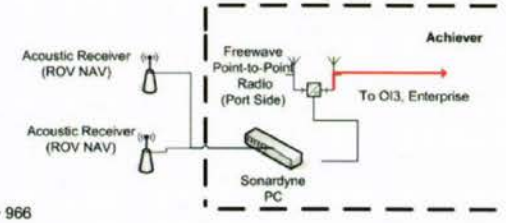
$$\text{Scaled Value} = \frac{(\text{Raw Value} - \text{Raw Min}) * (\text{Max Scaled} - \text{Min Scaled})}{(\text{Raw Max} - \text{Raw Min})}$$

### PT-B

$$\text{Scaled Value} = \frac{(\text{Raw Value} - \text{Raw Min}) * (\text{Max Scaled} - \text{Min Scaled})}{(\text{Raw Max} - \text{Raw Min})} + 966$$

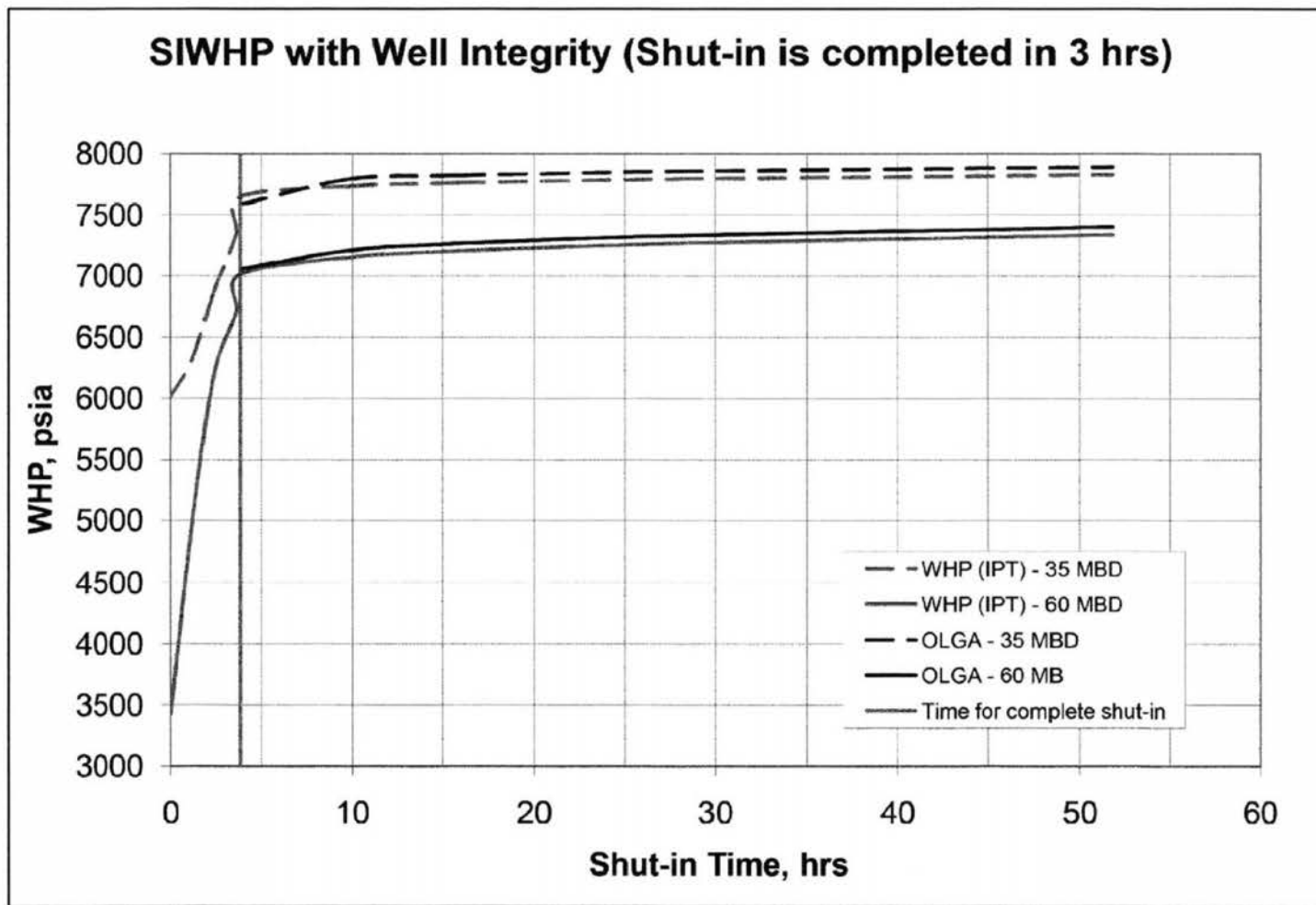
### Stellar Transmitters

$$\text{Scaled Value} = (\text{Raw Value} * \text{Gain}) + \text{Offset}$$









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**TREX 009320.0009**

TREX-009320.0009

Depth	Shut in Time (hrs)				
	3	9	15	27	51
4989	180	62	67	66	66
5186	220	163	138	121	107
5288	219	173	149	130	115
5387	219	180	158	138	122
5487	219	184	164	144	127
5586	219	187	168	149	132
5686	220	189	172	153	136
5786	220	190	174	156	139
5885	220	191	176	159	142
5985	221	192	178	161	145
6084	221	192	179	163	147
6954	225	196	185	174	162
7521	227	200	189	179	168
7607	227	201	191	180	170
7707	228	202	192	182	171
7807	228	202	193	183	172
8229	231	202	193	183	173
18300	245	245	245	245	245

Depth	Max Depl. Shut in Time (hrs)				
	3	9	15	27	51
4989	220	87	84	81	79
5004	227	94	89	85	82
5034	227	107	99	93	87
5094	227	126	113	104	96
5186	227	144	128	116	105
5288	226	157	139	124	112
5387	226	167	148	132	118
5487	227	175	155	138	124
5586	227	181	162	144	129
5686	227	186	167	149	133
5786	227	190	171	153	137
5885	228	193	175	157	141
5985	228	195	178	161	144
6084	228	197	181	164	147
6182	228	199	183	166	151
6279	228	200	184	169	153
8229	234	209	199	189	178
18300	245	245	245	245	245

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J568-097805

TREX 009320.0010

TREX-009320.0010

This data is obtained from OLCA simulation results  
and used as fluid temperatures in Prosper simulations  
for a given time after the shut-in.

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BPD568-097806

**TREX 009320.0011**

TREX-009320.0011

Sandface Pressures (detailed scale from start of well turn-down)  
 Data for Qo = 35 mbd, Cr = 12 μsips, Aquifer = 3.8x

Base Case, no Xflow						
Time		WellQ	Sandface	WHP (IPT)	DP Well	Time
85.0		35,000	9839			85.0
86.0	0.000	35,000	9835	6014		86.0
86.1	1.200	30,000	9971	6319		86.1
86.1	2.400	20,000	10269	6872		86.1
86.2	3.600	10,000	10582	7330		86.2
86.2	3.840	0	10858	7646	3212	86.2
86.2	4.800	0	10914	7659	3255	86.2
86.3	7.200	0	10962	7704	3258	86.3
86.4	9.600	0	10990	7731	3259	86.4
86.5	12.000	0	11011	7737	3274	86.5
86.6	14.400	0	11027	7752	3275	86.6
86.7	16.800	0	11041	7765	3276	86.7
86.8	19.200	0	11052	7761	3291	86.8
86.9	21.600	0	11062	7771	3291	86.9
87.0	24.000	0	11071	7779	3292	87.0
87.1	26.400	0	11078			87.1
87.2	28.800	0	11086			87.2
87.3	31.200	0	11092			87.3
87.4	33.600	0	11098			87.4
87.5	36.000	0	11104			87.5
87.6	38.400	0	11109			87.6
87.7	40.800	0	11114			87.7
87.8	43.200	0	11119			87.8
87.9	45.600	0	11124			87.9
88.0	48.000	0	11128			88.0
88.1	50.400	0	11132			88.1
88.2	52.800	0	11136			88.2
88.3	55.200	0	11140			88.3
88.4	57.600	0	11144			88.4
88.5	60.000	0	11147			88.5
88.6	62.400	0	11151			88.6
88.7	64.800	0	11154			88.7
88.8	67.200	0	11157			88.8
88.9	69.600	0	11160			88.9
89.0	72.000	0	11163			89.0
89.1	74.400	0	11166			89.1
89.2	76.800	0	11169			89.2
89.3	79.200	0	11172			89.3
89.4	81.600	0	11175			89.4
89.5	84.000	0	11177			89.5
89.6	86.400	0	11180			89.6

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D568-097807

TREX 009320.0012

TREX-009320.0012

Small Leak    Medium Leak  
 2849.040512    11658.84861

Base Case, Leak 5-10

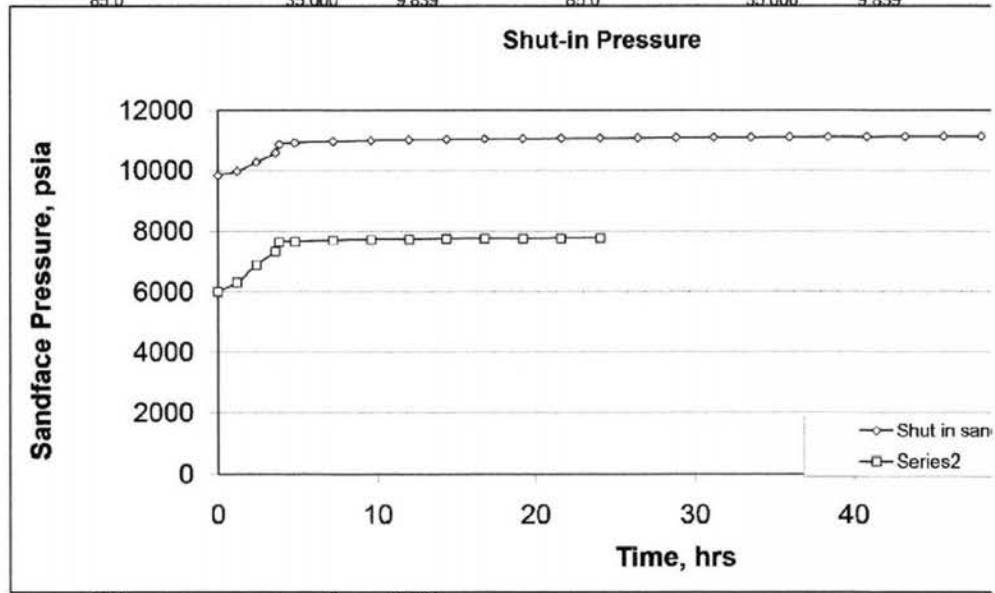
WellIQ	Sandface
35,000	9,839
35,000	9,835
30,000	9,971
20,000	10,269
10,000	10,582
0	10,709
0	10,826
0	10,870
0	10,896
0	10,914
0	10,929
0	10,941
0	10,951
0	10,959
0	10,967
0	10,974
0	10,980
0	10,985
0	10,991
0	10,996
0	11,000
0	11,005
0	11,009
0	11,013
0	11,017
0	11,021
0	11,024
0	11,028
0	11,031
0	11,034
0	11,037
0	11,040
0	11,043
0	11,046
0	11,048
0	11,051
0	11,053
0	11,056
0	11,058
0	11,061
0	11,063

Base Case, Leak 20-30

Time	WellIQ	Sandface
85.0	35,000	9,839
88.5	0	10,696
88.6	0	10,698
88.7	0	10,700
88.8	0	10,701
88.9	0	10,703
89.0	0	10,705
89.1	0	10,707
89.2	0	10,708
89.3	0	10,710
89.4	0	10,711
89.5	0	10,713
89.6	0	10,714

Base Case, Leak >70

Time	WellIQ	Sandface
85.0	35,000	9,839



Time	WellIQ	Sandface
88.5	0	10,696
88.6	0	10,698
88.7	0	10,700
88.8	0	10,701
88.9	0	10,703
89.0	0	10,705
89.1	0	10,707
89.2	0	10,708
89.3	0	10,710
89.4	0	10,711
89.5	0	10,713
89.6	0	10,714

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BPD568-097808

TREX 009320.0013

TREX-009320.0013



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J568-097809

89.7	88.800	0	11182	89.7
89.8	91.200	0	11185	89.8
89.9	93.600	0	11187	89.9
90.0	96.000	0	11190	90.0

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BPD568-097810

TREX-009320.0015

**TREX 009320.0015**

0	11,065	89.7	0	10,716
0	11,067	89.8	0	10,718
0	11,069	89.9	0	10,719
0	11,071	90.0	0	10,721

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BP-HZN-2179MD127117806  
D568-097811



**Sandface Pressures (detailed scale from start of well turn-down)**

Data for Qo = 60 mbd, Cr = 12 μsips, Aquifer = 3.8x

		Hi Q Case, no Xflow			
Time		WellQ	Sandface	WHP (IPT)	Time
85.00		60000	8516		85.00
86.00	0.00	60000	8508	3424 -2590	86.00
86.05	1.200	30000	8553	4997 -1322	86.05
86.10	2.400	20000	9548	6199 -673	86.10
86.15	3.600	10000	9901	6695 -635	86.15
86.16	0.00 3.840	0	10178	7011 -635	86.16
86.20	0.96 4.800	0	10250	7078 -581	86.20
86.30	3.36 7.200	0	10319	7102 -602	86.30
86.40	5.76 9.600	0	10366	7146 -585	86.40
86.50	8.16 12.000	0	10400	7178 -559	86.50
86.60	10.56 14.400	0	10428	7205 -547	86.60
86.70	12.96 16.800	0	10451	7227 -538	86.70
86.80	15.36 19.200	0	10472	7247 -514	86.80
86.90	17.76 21.600	0	10489	7263 -508	86.90
87.00	20.16 24.000	0	10503	7244 -535	87.00
87.10	22.56 26.400	0	10516	7257 7257	87.10
87.20	24.96 28.800	0	10529	7269 7269	87.20
87.30	27.36 31.200	0	10540		87.30
87.40	29.76 33.600	0	10551		87.40
87.50	32.16 36.000	0	10561		87.50
87.60	34.56 38.400	0	10570		87.60
87.70	36.96 40.800	0	10579		87.70
87.80	39.36 43.200	0	10587		87.80
87.90	41.76 45.600	0	10595		87.90
88.00	44.16 48.000	0	10603		88.00
88.10	46.56 50.400	0	10610		88.10
88.20	48.96 52.800	0	10618		88.20
88.30	51.36 55.200	0	10624		88.30
88.40	53.76 57.600	0	10631		88.40
88.50	56.16 60.000	0	10637		88.50
88.60	58.56 62.400	0	10644		88.60
88.70	60.96 64.800	0	10650		88.70
88.80	63.36 67.200	0	10656		88.80
88.90	65.76 69.600	0	10661		88.90
89.00	68.16 72.000	0	10667		89.00
89.10	70.56 74.400	0	10672		89.10
89.20	72.96 76.800	0	10677		89.20
89.30	75.36 79.200	0	10682		89.30
89.40	77.76 81.600	0	10687		89.40
89.50	80.16 84.000	0	10692		89.50

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BPD568-097812

**TREX 009320.0017**

TREX-009320.0017

Hi Q Case, Leak 5-10

WellQ	Sandface	Time
60,000	8,516	85.00
60,000	8,508	86.00
30,000	8,553	86.05
20,000	9,548	86.10
10,000	9,901	86.15
0	10,073	86.16
0	10,182	86.20
0	10,246	86.30
0	10,289	86.40
0	10,322	86.50
0	10,348	86.60
0	10,370	86.70
0	10,389	86.80
0	10,405	86.90
0	10,418	87.00
0	10,430	87.10
0	10,442	87.20
0	10,453	87.30
0	10,462	87.40
0	10,471	87.50
0	10,480	87.60
0	10,488	87.70
0	10,496	87.80
0	10,503	87.90
0	10,510	88.00
0	10,517	88.10
0	10,524	88.20
0	10,530	88.30
0	10,536	88.40
0	10,542	88.50
0	10,548	88.60
0	10,554	88.70
0	10,560	88.80
0	10,565	88.90
0	10,570	89.00
0	10,575	89.10
0	10,580	89.20
0	10,584	89.30
0	10,589	89.40
0	10,593	89.50

Hi Q Case, Leak 20-30

WellQ	Sandface	Time
60,000	8,516	85.00
60,000	8,508	86.00
30,000	8,553	86.05
20,000	9,548	86.10
10,000	9,901	86.15
0	9,985	86.16
0	10,038	86.20
0	10,082	86.30
0	10,115	86.40
0	10,126	86.50
0	10,105	86.60
0	10,119	86.70
0	10,132	86.80
0	10,144	86.90
0	10,154	87.00
0	10,163	87.10
0	10,172	87.20
0	10,180	87.30
0	10,188	87.40
0	10,196	87.50
0	10,203	87.60
0	10,209	87.70
0	10,216	87.80
0	10,222	87.90
0	10,228	88.00
0	10,233	88.10
0	10,238	88.20
0	10,243	88.30
0	10,248	88.40
0	10,253	88.50
0	10,257	88.60
0	10,262	88.70
0	10,266	88.80
0	10,270	88.90
0	10,274	89.00
0	10,278	89.10
0	10,282	89.20
0	10,286	89.30
0	10,289	89.40
0	10,293	89.50

Hi Q Case, Leak >70

WellQ	Sandface	Time
60,000	8,516	85.00
60,000	8,508	86.00
30,000	8,553	86.05
20,000	9,548	86.10
10,000	9,901	86.15
0	9,836	86.16
0	9,274	86.20
0	9,394	86.30
0	9,382	86.40
0	9,393	86.50
0	9,411	86.60
0	9,427	86.70
0	9,437	86.80
0	9,446	86.90
0	9,453	87.00
0	9,457	87.10
0	9,461	87.20
0	9,465	87.30
0	9,470	87.40
0	9,474	87.50
0	9,480	87.60
0	9,485	87.70
0	9,493	87.80
0	9,502	87.90
0	9,512	88.00
0	9,520	88.10
0	9,527	88.20
0	9,532	88.30
0	9,536	88.40
0	9,539	88.50
0	9,542	88.60
0	9,544	88.70
0	9,546	88.80
0	9,548	88.90
0	9,550	89.00
0	9,552	89.10
0	9,554	89.20
0	9,556	89.30
0	9,558	89.40
0	9,561	89.50

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J568-097813

TREX 009320.0018

TREX-009320.0018

89.60	82.56	86.400	0	10696	89.60
89.70	84.96	88.800	0	10700	89.70
89.80	87.36	91.200	0	10704	89.80
89.90	89.76	93.600	0	10708	89.90
90.00	92.16	96.000	0	10711	90.00

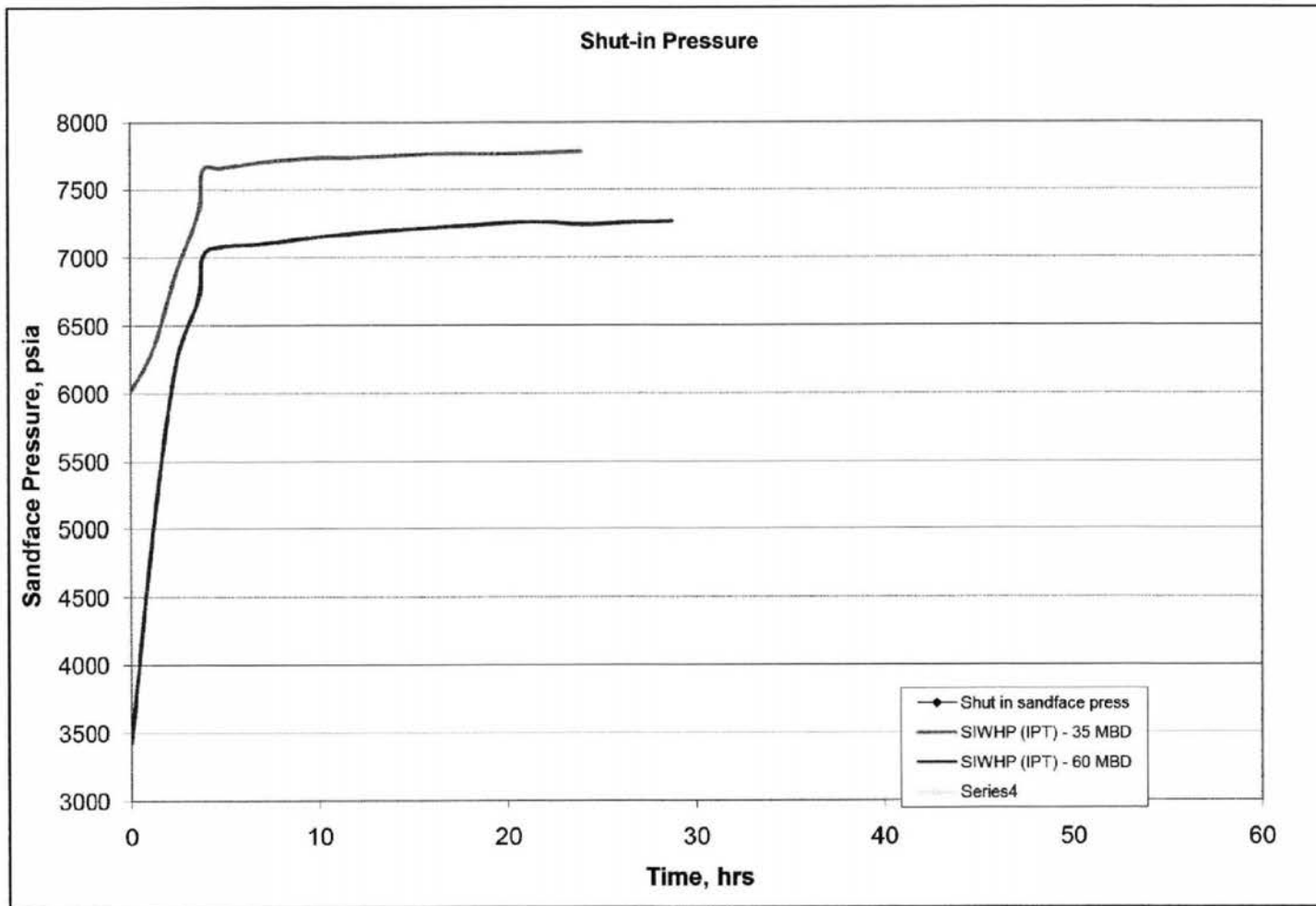
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BP-HZN-2179MDL07117809  
BPD568-097814

**TREX 009320.0019**

TREX-009320.0019

0	10,597	89.60	0	10,296	89.60	0	9,563
0	10,601	89.70	0	10,299	89.70	0	9,565
0	10,604	89.80	0	10,302	89.80	0	9,568
0	10,608	89.90	0	10,305	89.90	0	9,571
0	10,611	90.00	0	10,308	90.00	0	9,574



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BP-HZN-2179MDL07117811

BPD568-097816

TREX 009320.0021

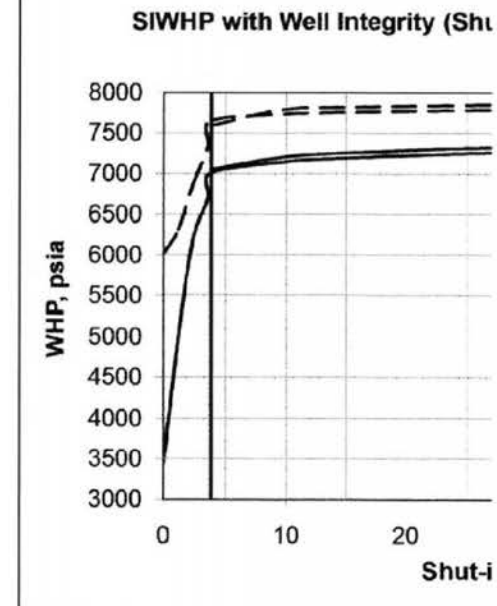
TREX-009320.0021

Base Case, no Xflow			
Time, hrs	WellQ	Sandface	WHP (IPT)
0	35000	9835	6014
1	30000	9971	6319
2	20000	10269	6872
3.60	10000	10582	7330
3.84	0	10858	7646
10	0	10992	7733
16	0	11035	7760
28	0	11083	7791
52	0	11135	7826

HI Q Case, no Xflow			
Time, hrs	WellQ	Sandface	WHP (IPT)
0	60000	8508	3424
1	30000	8553	4997
2	20000	9548	6199
3.60	10000	9901	6695
3.84	0	10178	7010
10	0	10369	7149
16	0	10442	7202
28	0	10524	7264
52	0	10615	7335

OLGA		
	35 MBD	60 MBD
3.84	7585	7055
10	7791	7208
16	7820	7265
28	7854	7330
52	7891	7403

3.84	0
3.84	8000

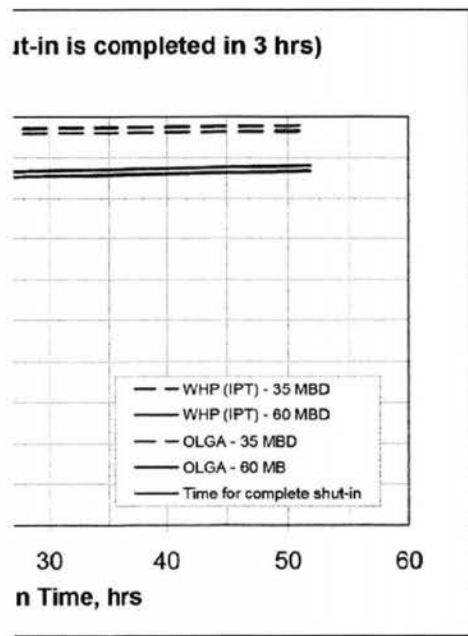


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BP-HZN-2179MDL07117812  
J568-097817

TREX 009320.0022

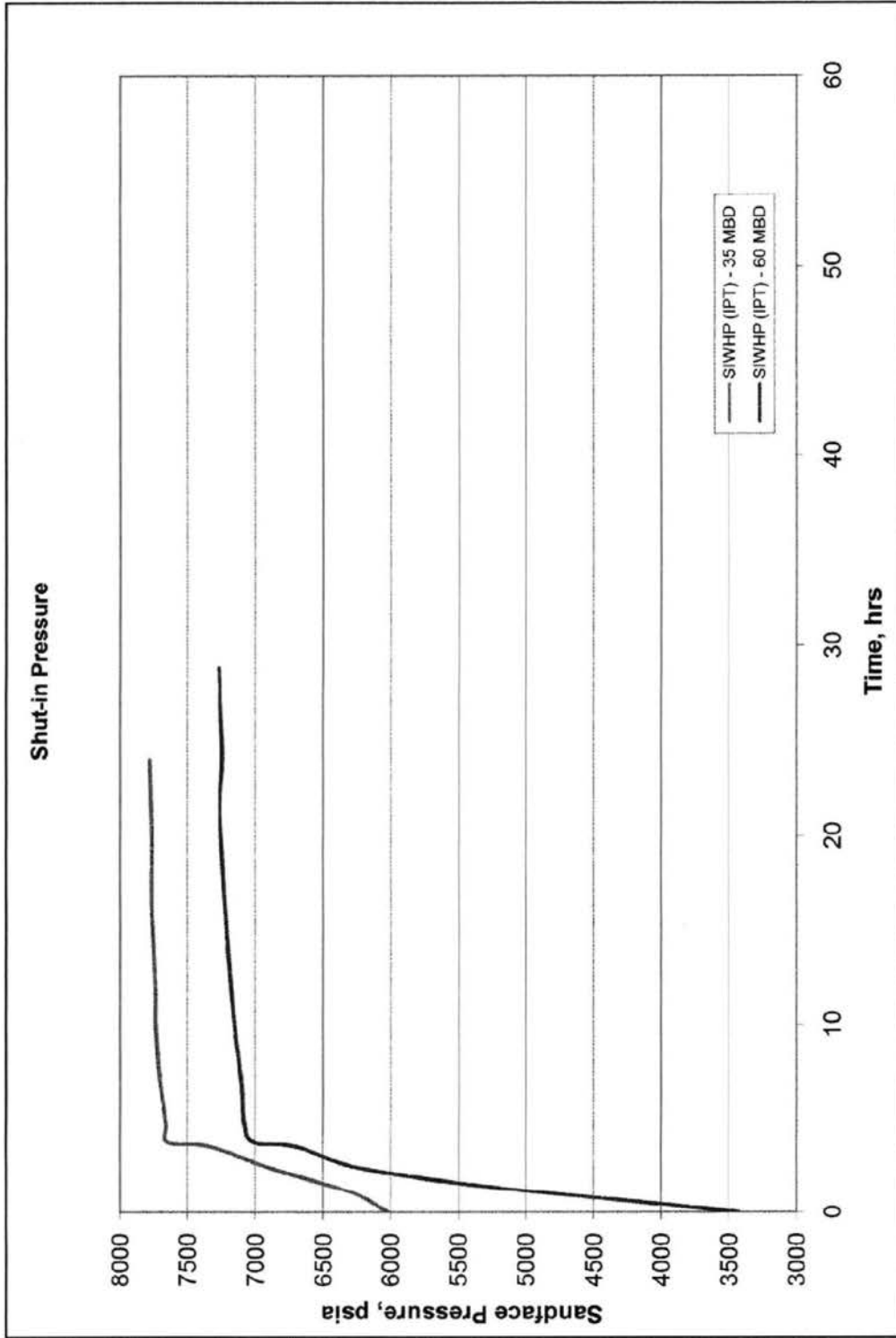
TREX-009320.0022



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BP-HZN-2179MDL07117813  
BPD568-097818

TREX 009320.0023



Shut-in Pressure

Sandface Pressure, psia

Time, hrs

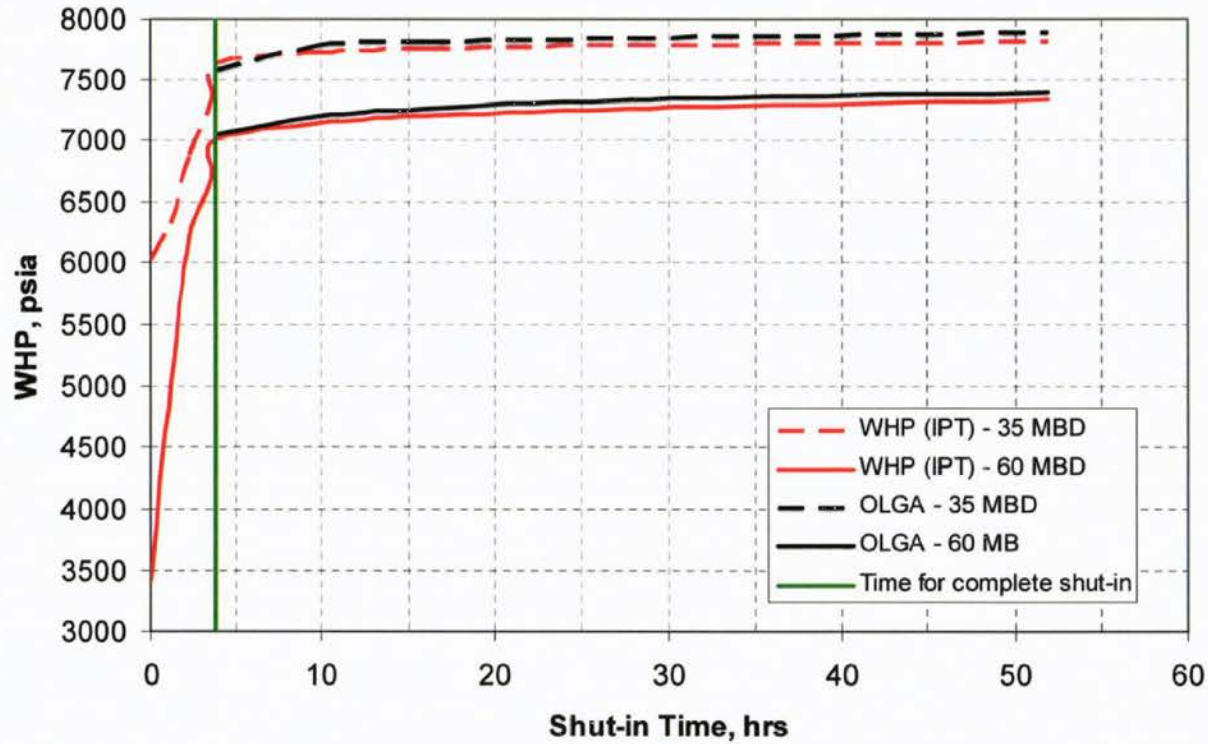
— SIWHP (IPT) - 35 MBD  
 - - - SIWHP (IPT) - 60 MBD

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BP-HZN-2179MD-07117814  
 D568-097819



**SIWHP with Well Integrity (Shut-in is completed in 3 hrs)**



Base Case			
Time, hrs	WellQ	Sandface	WHP (IPT)
0	35000	9835	6014
1	30000	9971	6319
2	20000	10269	6872
3.60	10000	10582	7330
3.84	0	10858	7646
10	0	10992	7733
16	0	11035	7760
28	0	11083	7791
52	0	11135	7826

60 MBD Case			
Time, hrs	WellQ	Sandface	WHP (IPT)
0	60000	8508	3424
1	30000	8553	4997
2	20000	9548	6199
3.60	10000	9901	6695
3.84	0	10178	7010
10	0	10369	7149
16	0	10442	7202
28	0	10524	7264
52	0	10615	7335

	OLGA	
	35 MBD	60 MBD
3.84	7585	7055
10	7791	7208
16	7820	7265
28	7854	7330
52	7891	7403

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