

Success Story Of KRH#5-2

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1. Overview of KRH#5-2

Karahabodas is one of Pertamina Geothermal Energy Project in West Java, Tasikmalaya. Karahabodas geothermal field lies in a volcanic ridge bordered by Mount Galunggung which is an active volcano that last erupted in 1984. At about 30 MW power plant will be built and supported by a number of geothermal wells.

2. KRH#5-2 story

KRH#5-2 is the first new well drilled by PGE in Karahabodas Project, after drilling 3 make up wells. It was drilled from July 6th 2012 until August 11th 2012 and was continued on January 6th – 25th 2013 due to technical problems.

It was drilled first by PDSI on July 6th, 2012, until it reached **1974 mKU/1536.69 mKT** depth. The drilling was stopped because of technical problems. And was continued on January 6th 2013 and achieved target in **2420 mKU/1834.43 mKT** on January 25th 2013.

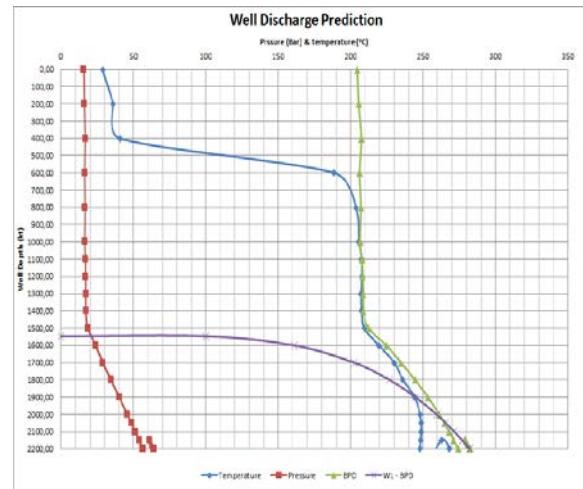
3. PT result of KRH#5-2, Af/Ac dan skin factor pas dibaca wct

Artesian wells are the wells which the steam can flow to the surface by itself. Non-artesian wells are the wells which the steam cannot flow to the surface by itself, so that special treatments are needed in order to make the steam flows to the surface. The treatments can be done by compressing the wells or using air drilling. This treatment is to press water level inside to obtain pressure from reservoir. It is expected that the remaining fluid from drilling will be leaked out in opening after compressing.

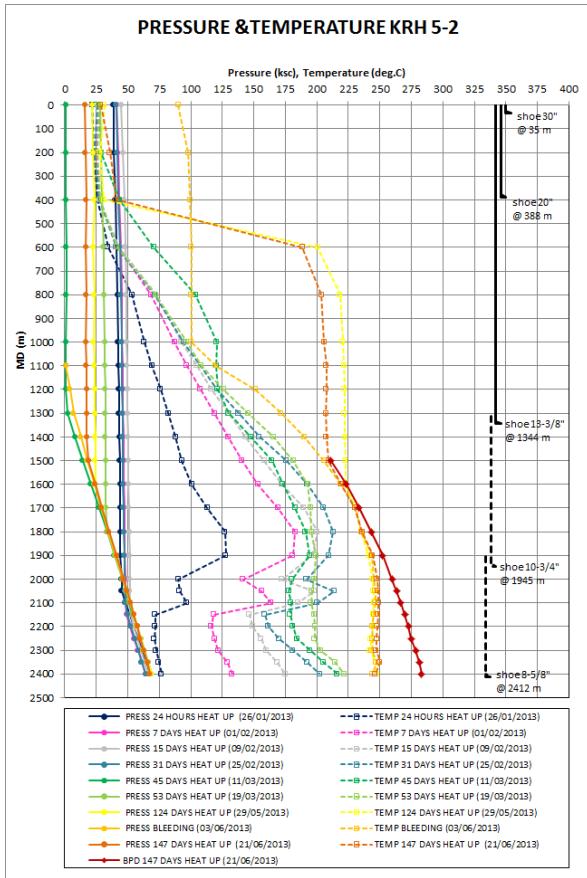
After finishing the drilling, this KRH#5-2 well is a non-artesian well because when it was first opened, the steam did not automatically flow to the surface. However, after 7 treatments, the well was able to channel the steam and produced about 48,25 T/j, the pressure at head well was 13 ksc.

On the WCT (well completion test), the average inject data was 345,47 lpm/ksc. And if the inject data and production result test was compared to other wells, the potency of KRH#5-2 well was expected to reach 5 Mwe.

Based on PT June 21th 2013 water level is in 1500 MD, and reached highest pressure and temperature at 67,58 ksc and 250,12°C. BPD result at the same depth in highest temperature is 281,31°C. If we compare BPD and the highest temperature, we would be disappointed and no doubt this well wouldn't flow. And based on Af/Ac, the result was 0,38. It means the well has little chance it will flow by itself. And it was right, because when opened for the first time, it cannot flow. One of the predictions why it cannot flow was fluid after drilling. But after many exercised, it flowed.



Picture 1. Result Comparing Af/Ac



Picture 2. PT result June,21th 2014

4. KRH#5-2 excercised

KRH#5-2 was opened 6 times before flowing by itself. The table below shows how many times KRH#5-2 was opened.

NO	Date	Activity	Result	Last WHP (ksc)
1	March,5th 2013	Bleeding	Closed	1
2	March,20t	Bleeding	Closed	0

3	March,27th 2013	Bleeding and spontaneous open	Closed	0
4	April,18th 2013	Bleeding	Closed	0
5	April,22th 2013	Bleeding	Closed	0
6	May,31th 2013	Bleeding	Bleeding to pound	3,2
7	July,30th 2013	Bleeding horizontal open	Horizontal open and start to get steam	4,2
8	August,27th 2013	Production test with separator methode	Steam Produce = 48,25 T/J at WHP = 13 ksc	

After many excercise, this wells finally can flows by it self. And finally produced 48,25 T/J at WHP = 13 ksc.

5. Conclusions

- The final result cannot be determined merely by PT. Even though the measurement of PT showed not too satisfying results, when the well is often exercised, it will produce optimum result.*
- WCT result can be used as a reference and the result might be different.*
- The remaining fluid from drilling is advised not to be flowed back into the well because it will block the steam from flowing to the surface.*