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The investigation of the prospect of using potential abandoned wells in South Sumatera

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ABSTRACT

This paper aims to examine the existence and current technical conditions of old wells in southern Sumatra. Research conducted based on the analysis method of description of the data in the form of information on the distribution of old wells in general and other supporting data. The hypothesis developed in this paper that the future prospects of the use of old wells are closely related to infrastructure, regulation and socio-economic as well as the environment. The results of the study were obtained from 2,813 old wells in South Sumatra Province are found in five districts, namely Banyuasin Regency, Muara Enim Regency, Musi Banyuasin Regency, Musi Rawas Regency and Ogan Ilir Regency. The highest order is Musi Banyuasin Regency with 108 wells, Ogan Ilir Regency with 6 wells, Muara Enim Regency with 7 wells, Musi Rawas Regency with 6 Wells and Banyuasin Regency with 4 wells. In general, the location of old wells in the five districts is very easy to reach because it is approximately 4 km to 7 km from the existing road. From the regulatory aspect, Musi Banyuasin district is more ready than the four other regencies because there are regional regulations that are derived from higher regulations and BUMD engaged in oil and gas (petroMuba). For the implications on the social and economic impact obtained that there is employment, increasing per capita income, preventing urbanization and developing human resources. From the environmental side, it is very necessary to have assistance and counseling in the management of old wells due to the lack of concern for the environment as evidenced by the non-standard in the management of liquid waste, air quality and B3 waste. Recommendations from the results of the study conclude that there needs to be firmness in the implementation of technical and environmental standards BPMIGAS Work Guideline No 023 / PTK / III / 2009 concerning Exploitation of Petroleum Mining in Old Wells.

Key words: Old wells, Potential, Prospects, Infrastructure, Regulation, Social economy, Environment

Introduction

The use of oil from year to year has increased, while there are only a few reserves. Indonesia's oil production in 2010 reached 344.5 million SBM with proven reserves that could only provide oil for 11 years (Outlook Energy Indonesia, 2012). The limitation of its depleting reserves requires the Government of Indonesia to make alternatives to meet the national energy needs, especially in oil, one of

which is to reproduce old wells.

Based on [2] Ministerial Regulation Energy and Mineral Resources No.01. In 2008, the Old Well was an oil well That was drilled before the year 1970 and has been in production and is located in a field that is not cultivated in a work area bound by a contract of cooperation and is no longer sought by the contractor. Old wells that are still potential can be reproduced by the applicant through a series of stages. The Ministry of Energy and Mineral Re-

sources obtained total data of the old wells in Indonesia currently reaching 13,824 wells. Of the total old wells in Indonesia, 745 old wells are active and 13,079 inactive old wells (Outlook Energy Indonesia, 2012) from the available data it can be seen that utilization of old wells has not yet been carried out to the full. The total number of old wells in Indonesia is spread across the southern Sumatra Province as many as 3,623 wells, northern Sumatra 2,392 wells, central Sumatra 1,633 wells, East Kalimantan 3,143 wells, South Kalimantan 100 wells, Central Java-East Java-Madura 2,496 wells, Papua 208 wells and Seram 229 wells. South Sumatra Province has more old wells compared to other areas, which is 3,623 wells. This means that the South Sumatra Province has a greater opportunity to develop and optimize the use of old wells in Indonesia to help increase national oil production (Outlook Energy Indonesia, 2012).

This paper aims to determine and recommend the old wells that have potential prospects to be utilized in Southern Sumatra.

Methodology

Research Time and Location

The study was conducted at the beginning of September 2017 until the end of November 2017 in the Exploration and Hydrology Laboratory room at the Mining Engineering Department, Unsri Faculty of Engineering, Inderalaya.

Research Procedure

The choice of location is based on the number of petroleum mining activities carried out in old wells traditionally. This research is a type of census research, which is a type of research that takes all locations of wells as research subjects. What is meant by the census is research that tries to explore how and why the phenomenon of old well mining occurs (Arikunto, 1996). The selection of the object of this study is based on the number of petroleum mining activities in old wells that are carried out traditionally. Sources of data in this study using secondary sources. Secondary data is a source of data derived from the literature of books, the internet, related agencies in this case is a report from SKK MIGAS, the Ministry of Energy and Mineral Resources and RTRW of South Sumatra Province

Results and Discussion

Distribution and Supporting Infrastructure

Old Well Location Distribution

Based on SKK MIGAS data from the South Sumatra Regional Office, there are thousands of old wells in South Sumatra. But what is identified through the coordinates of the location of old wells in this study, namely 138 old wells. The number of old wells is scattered in several districts, where the district with the most old wells is Musi Banyuasin Regency. And the smallest number is in Banyuasin Regency. The following is a summary of data from old wells in southern Sumatra. Old wells were identified in five districts namely Banyuasin Regency 4 wells, Muara Enim Regency 7 wells, Musi Regency Banyuasin 108 wells, Musi Rawas Regency 6 wells and Ogan Ilir Regency 6 wells (Figure 1). The coordinates of the location of the old well are plotted into the map and overlaid with several other map sections, such as regional maps, state road network maps and district road network maps. The area map is used as the basis for classification of well locations, so old wells are divided into districts, while road network maps (state roads and district roads) function as supporting infrastructure for the development of old wells and also as access to reach well locations.

Supporting Infrastructure Development Old Well

Infrastructure supporting the development of old wells which one of them is the access roads to the location of wells. This road will be used to transport equipment for oil mining and other helping equipment

Besides that, the distance between the location of the well and the buyer greatly influences the economics of a well. The farther a well, the more expensive transportation costs. The following will explain the infrastructure and accessibility of old wells from nearby roads in several locations.

Location of Old Well Banyuasin Regency

The data of old wells identified in this study are 4 wells, where the wells are in locations close to one another. from identification using spatial data of the distance of the location of the old well to the nearest road (district road which is ± 8.2 Km. this is quite close to the infrastructure as access road to the location. Besides that the location of this well is near the

boundary between the Banyuasin and Muara districts Enim, the closest distance from the Banyuasin district road is 14 Km.

Location of Old Well of Muara Enim Regency

One district that has many old wells is Muara Enim district. However, little can be identified in research. Based on data, the number of old wells identified was 7 wells. Administratively the location of the old well is within the area of Muara Enim Regency but in spatial distance, the location of the old well is closer to the City of Prabumulih. The closest distance to the location of the old well with the causeway is 4 Km, 5 KM and 19 KM from the crossing in the City of Prabumulih. The location of these old wells is quite promising in terms of accessibility in the process of developing old wells. Only a few hundred meters from the location of the well there are district roads, and many access to small roads used by local residents, this is certainly very helpful in the framework of developing old wells in this area.

Location of Old Well in Musi Regency Banyuasin

Based on the data that was successfully identified in this study, the number of old wells in Musi Banyuasin Regency counted to 108 wells or 78% of the total identified number. The location of old wells in Musi Banyuasin Regency is divided into 5 regional locations. The location in this area is exactly close to the State road and district road, so it is very easy to reach this location.

The location of the old well is in the secondary forest area, the closest access from the residents' road is 760 meters up to 1.8Km Right west of the previous location are 3 other old well locations. The distance from the previous location is ± 16 km to the west. Spatially this location is ± 3 km from the district road. If viewed spatially with a scale of up to 1: 750,000, several locations in Banyuasin Regency are seen piling up at a point, this indicates that the wells are close to each other. Accessibility to locations can be reached from the road of Musi Rawas Regency with a distance of about 12 km. If viewed from the previous location, separated as far as ± 23 km.

Location of the Old Well of Musi Rawas Regency

There are 6 old wells in this district. Access to the old well can be traveled from the nearest district road which is about 2.5 km and 4.2 km. both loca-

tions are close to the border of Musi Banyuasin Regency.

Location of Old Well in Ogan Ilir Regency

The number of old wells in Ogan Ilir Regency is 9 old wells. The location can be accessed easily from a national road, the distance is about 2km, and also this location is close to the railroad tracks. This location is also not too far from the city of Palembang, only about 27 Km from the center of Palembang.

Regulation of Old Well Development

Regulations regarding old wells are guided by the following rules

- 1945 Constitutional article 33 paragraph 3
- UU no. 22 of 2001
- PP No. 35 of 2004
- ESDM Regulation No. 1 of 2008
- BP Migas Work Procedure Number BP 023/PTK/III/2009
- Musi Banyuasin Regional Regulation no. 28 years 2007

Utilization of natural resources has actually been stated in the 1945 Constitution article 33 paragraph 3 which contains "The earth, water and natural resources contained therein are controlled by the State and used for the greatest prosperity of the people". From the paragraph of the constitution it means that we can utilize various natural resources that exist in our Indonesian motherland. One of these natural resources is oil and gas. The management of oil and gas is then more specifically contained in Law No. 22 In 2001, besides managing natural resources in Law No. 22/2001 also contains the essence of regional autonomy which includes the authority in the management of natural resource.

BUMD, KUD were given the opportunity to do upstream and downstream business activities. Furthermore this essence is emphasized in article 34 PP No. 35 of 2004 concerning activities upstream oil and gas business that the contractor is obliged to offer a 10% participating interest to the BUMD when the first field development will be produced. In addition, other BUMD management opportunities are realized in the ESDM Regulation No. 1. In 2008 concerning guidelines for petroleum mining in old wells which stated that the exploitation and production of old well oil was carried out by KUD or BUMD based on an agreement with the contractor. Furthermore, more specific regulations regarding old wells are contained in BP MIGAS Work Guide-

lines Number 023 / PTK / III / 2009. The understanding of old wells according to ESDM Regulation No. 1 of 2008 is the Oil wells that were drilled before 1970 and were produced and located in a field that is not cultivated in a Work Area that is bound by a Cooperation Contract and no longer sought by the Contractor. For example, the classification of old wells for the Banyuasin region according to regulation no.28 of 2007 has a maximum depth of 650 m. These old wells are generally no longer producing, but their economics can be revisited at any time due to technology and inconsistent conditions. Old wells can return to production if managed by the BUMD or KUD as quoted from Ministerial Regulation ESDM no.1 of 2008 article 2. The definition of BUMD and KUD according to ESDM Regulation no 1 of 2008 article 1 namely, BUMD is a provincial/municipal level enterprise established and all its shares are owned by the Provincial, Regency, and or City Regional Governments and their business territories or the administration includes the location of the Old Well and KUD (Cooperative Unit Village) is a district-level Cooperative whose business area includes the location of the Old Well.

Social and Economic Impacts on Old Well Development

In the utilization and development of old wells, of course it cannot be separated from the social and economic impacts on the community around the old wells area which are in their development and use. These impacts generally benefit the surrounding community in terms of social and economic aspects, because they can exploit the potential residual contained in the abandoned oil wells.

Here are some social and economic impacts and/or benefits:

- Employment provider
- Increase revenue
- Emphasis on Poverty Rate
- Prevention of Urbanisation
- Lifestyle
- Human Resource Development

Environment Impact on Old Well Development

In terms of the economy, petroleum mining in these old wells is very helpful in improving the economy and living standards of the local community. On the other hand, oil mining in old wells which is done traditionally and has not followed technical and

environmental standards will cause oil spills that have an impact on water environment pollution.

Based on Government Regulation No18 of 1999 juncto Government Regulation No. 85 of 1999 concerning Management of Hazardous and Toxic Waste (LB3), oil spills in the area of oil and gas exploration and production activities included in the B3 waste category. This is because the nature and concentration can endanger human health and the environment, while the characteristics that include B3 waste are explosive, flammable, reactive, toxic, cause infections, are corrosive and are carcinogenic

To avoid oil spills and environmental pollution, petroleum mining in old wells technically and environmentally must refer to BPMIGAS Work Guideline No 023 / PTK / III / 2009 Concerning the Exploitation of Petroleum Mining in Old Wells.

Conclusion

From the results of a review of existing data it can be concluded that:

- The number of old wells that have the potential to be developed and utilized in South Sumatra is quite large but which is clearly recorded with the highest number in Musi Banyuasin district 108 wells, Ogan Ilir Regency 6 wells, Muara Enim Regency has 7 wells, Musi Rawas Regency 6 wells and Banyuasin Regency 4 wells
- Supporting infrastructure to facilitate its utilization in the five districts is relatively the same, that is, it is quite close to district and state roads
- Regulations for its use are adequate, especially in the Musi Banyuasin regency where there is already a regulations
- Social and economic impact is more dominant towards positive than negative
- From the environmental aspect the need for government decisiveness in implementing regulations BPMIGAS Work Guideline No 023 / PTK / III / 2009

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