

Pemodelan reservoir sistem geotermal lapangan "X" dengan simulator tough2 = Reservoir modeling of geothermal system at field "x" with tough2 simulator

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Abstrak

Lapangan "X" merupakan salah satu lapangan sistem geotermal dengan high temperature dan high enthalpy yang merupakan bagian dari Bandung Volcanic Complex. Ia merupakan peralihan antara jenis sistem vapor dominated dengan liquid dominated. Hal ini terlihat dari sumur bagian utara yang memproduksi fluida dari sistem jenis vapor dominated, sedangkan sumur bagian Selatan memproduksi fluida dari sistem jenis liquid dominated. Di lapangan ini terdapat empat pusat fluid upwelling, dua di antaranya berasosiasi dengan G.Walawi andesite stratovolcano dan dua lainnya dengan G.Lani & G.Intan andesitic volcanoes. Untuk mengetahui karakteristik reservoir, letak dan besar energi heat source, serta hidrogeologi maka perlu dibuat pemodelan reservoir dengan simulator TOUGH2. Kesesuaian kurva yang didapatkan dari hasil pemodelan dengan 11 data sumur mengindikasikan tercapainya natural state. Diperoleh steam cap dari reservoir dipisahkan oleh Buri Horst dengan permeabilitas rendah, menghasilkan bagian utara dan selatan. Heat source terletak tepat di bawah zona reservoir dengan temperatur 320OC dan reservoir memiliki temperatur rata - rata 257OC dengan luas sekitar 40 km².

.....Field "X" is one of many geothermal fields located in Bandung Volcanic Complex with high temperature and high enthalpy. It is a transition between vapor dominated with liquid dominated system. This is seen from the well at north producing fluids indicating vapor dominated system, meanwhile fluid is produced from a liquid dominated system at the south. The field has four fluid upwellings, two of them are associated with Mt.Walawi andesitic stratovolcano and two others with Mt.Lani & Mt. Intan andesitic volcanoes. To determine the reservoirs characteristic, location and total energy of heat source, and hydrogeology, modeling of the reservoir needed to be conducted with TOUGH2 simulator. The compatibility of curves gained from the modeling with well data indicates that the natural state has been reached. The result shows the steam cap of the reservoir is separated by the Buri Horst with low permeability, dividing it into the northern and southern sector. The heat source is located beneath the reservoir with temperature of 320OC and the average temperature of reservoir is 257OC with extensive area of 40 km².