

Supporting Information for

Numerical Simulation of CO₂ Huff and Puff Feasibility for Light Oil Reservoirs in the Appalachian Basin: Sensitivity Study and History Match of a CO₂ Pilot Test

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Scope of Document: 6 Different model realizations, used for studying effect of permeability variations, are shown in Appendix A. Model parameters, schematic, and simulation results of three base cases of history match are presented in Appendix B.

Appendix A, B

9 pages

Appendix A

6 Different model realizations, used for studying effect of permeability variations, are shown in this Appendix

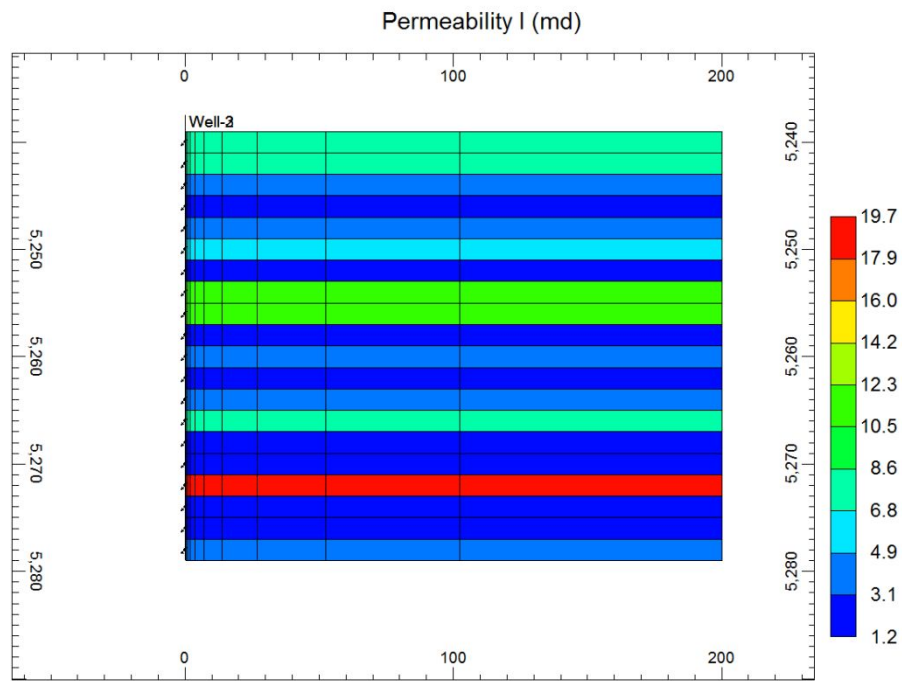


Figure A-1: Realization 1

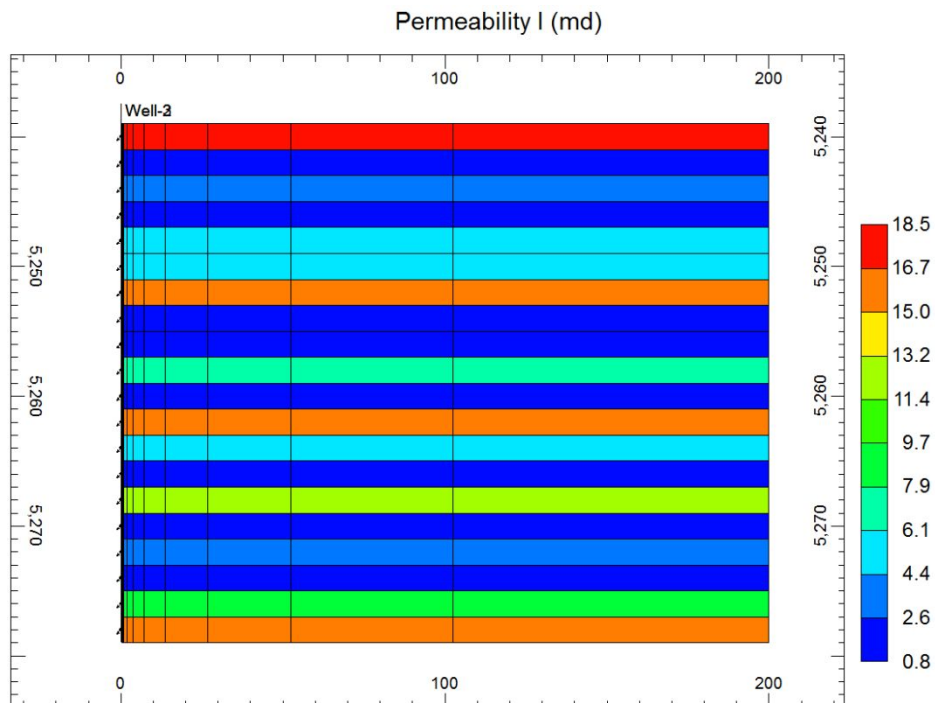


Figure A-2: Realization 2

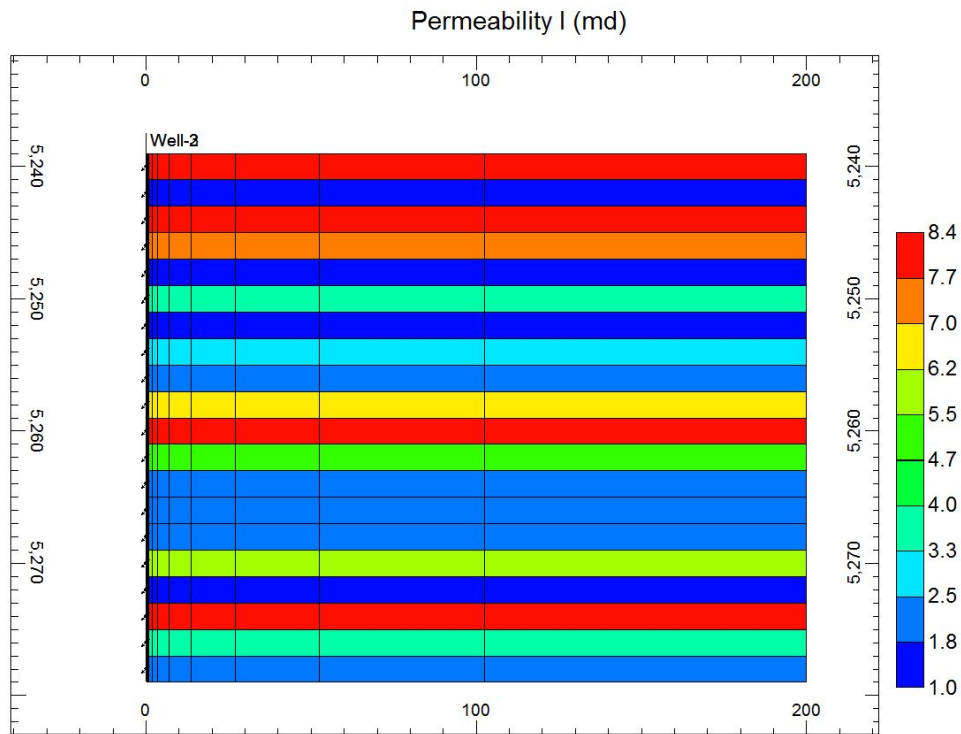


Figure A-3: Realization 3

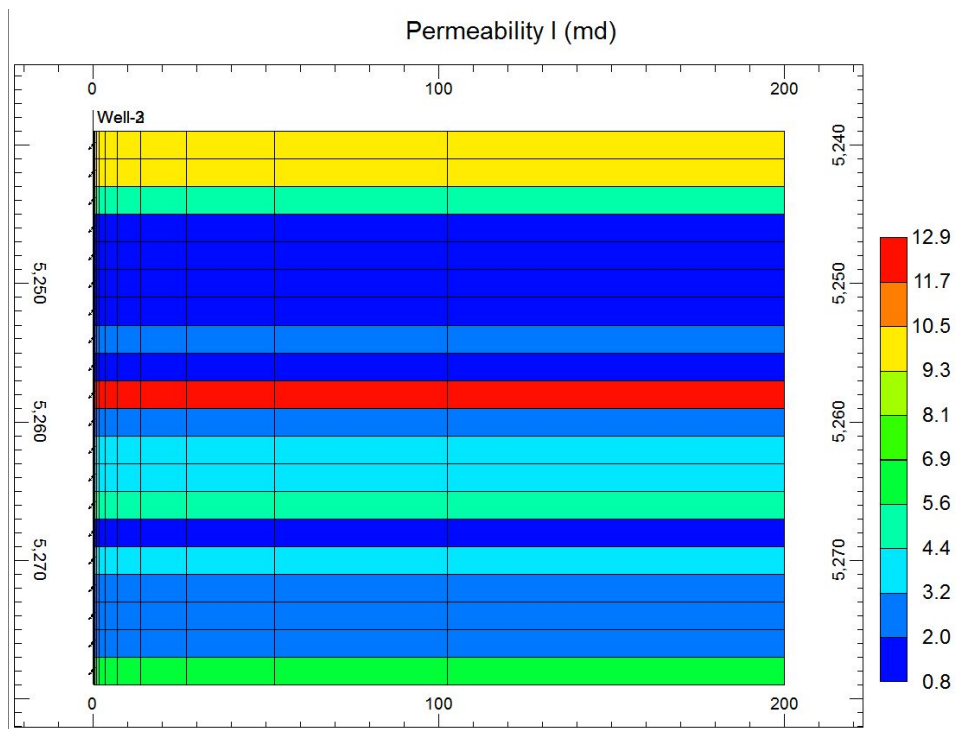


Figure A-4: Realization 4

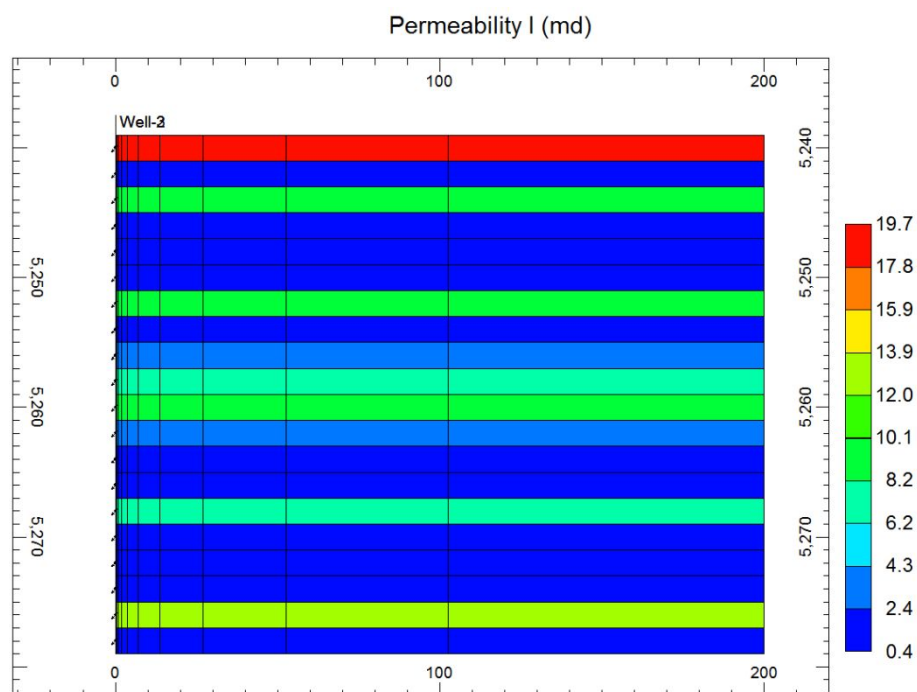


Figure A-5: Realization 5

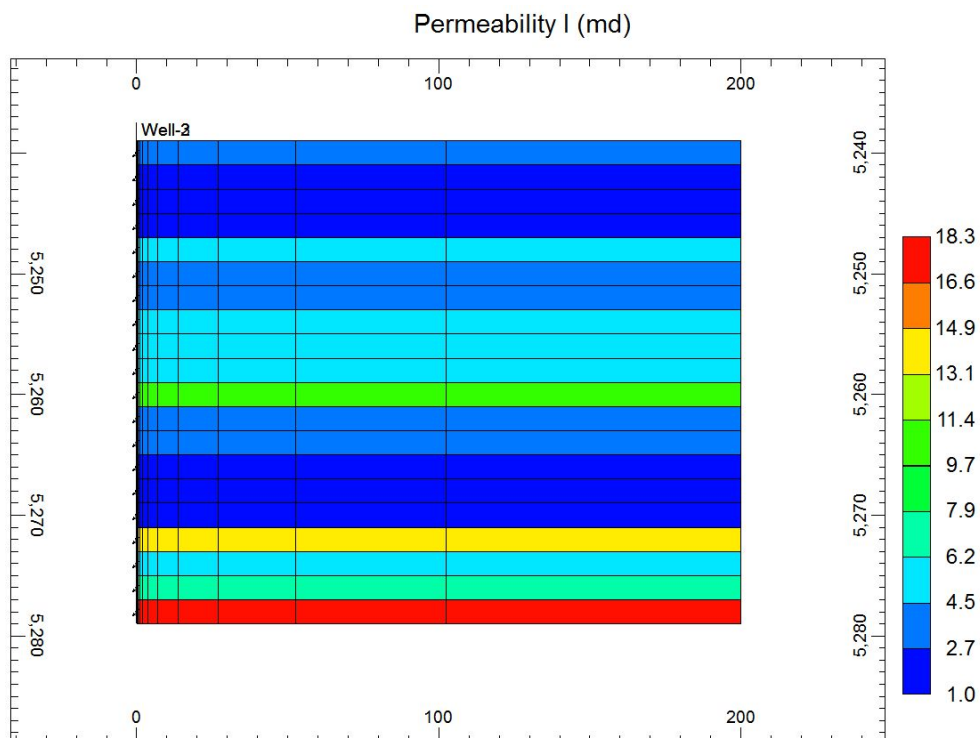


Figure A-6: Realization 6

Appendix B

Appendix B present model parameters, schematic, and simulation results of three base cases.

Table B-1: shows the data sources, parameters, and other assumptions associated with the 3 different models.

Model Type	Constant permeability	Layered Permeability (two value Permeability)	Layered vertically and Laterally Permeability (two value Permeability)
Porosity	6.6%	6.6%	6.6%
Thickness(ft)	111	111	111
Initial Sw	0.3	0.3	0.3
Net Pay Ratio	1	1	1
Reservoir Boundary Radius(ft)	200	200	200
Perforation Zone (ft)	5239 – 5343	5239 – 5343	5239 – 5343
Initial Pressure (psi)	Equal to Pb 1960 psi	Equal to Pb 1960 psi	Equal to Pb 1960 psi
Permeability (md)	8.5 md	10 md (High Perm) 1 md (Low Perm)	12 md (High Perm) 1 md (Low Perm)
Primary Production Constrain	Oil Rate Constrain	Oil Rate Constrain	Oil Rate Constrain
huff and puff constrain (MT)	CO2 Rate Constrain (Injecting 150 MT)	CO2 Rate Constrain (Injecting 150 MT)	CO2 Rate Constrain (Injecting 150 MT)

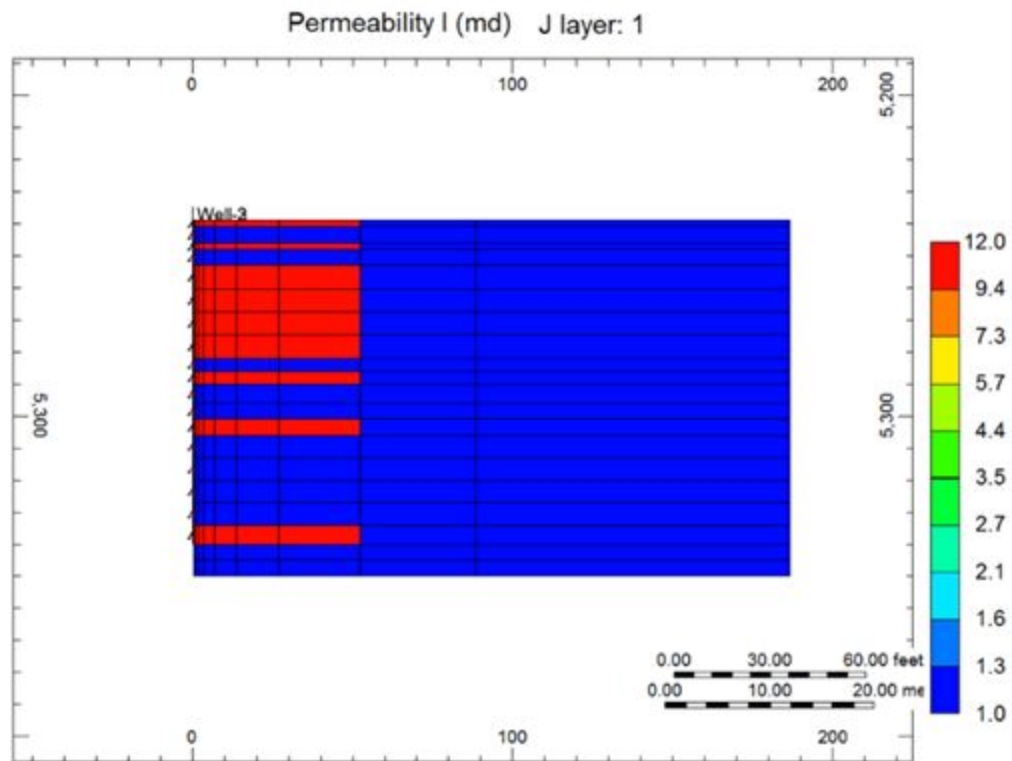
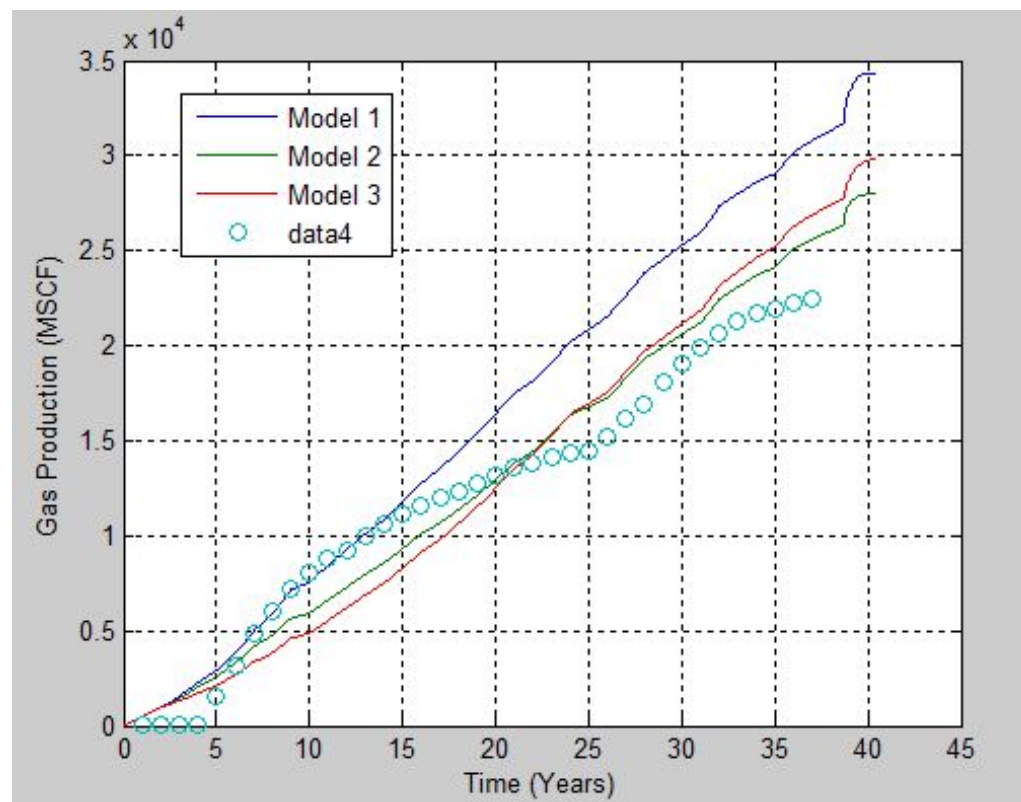
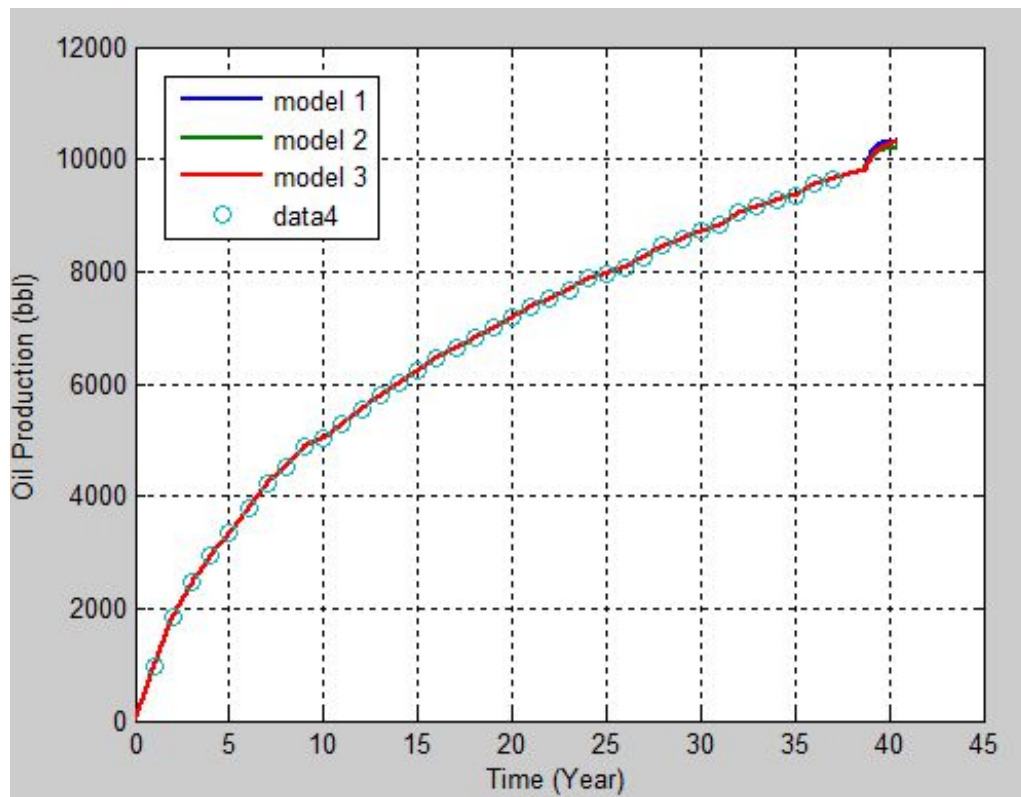


Figure B-1: Model schematics of three basic models



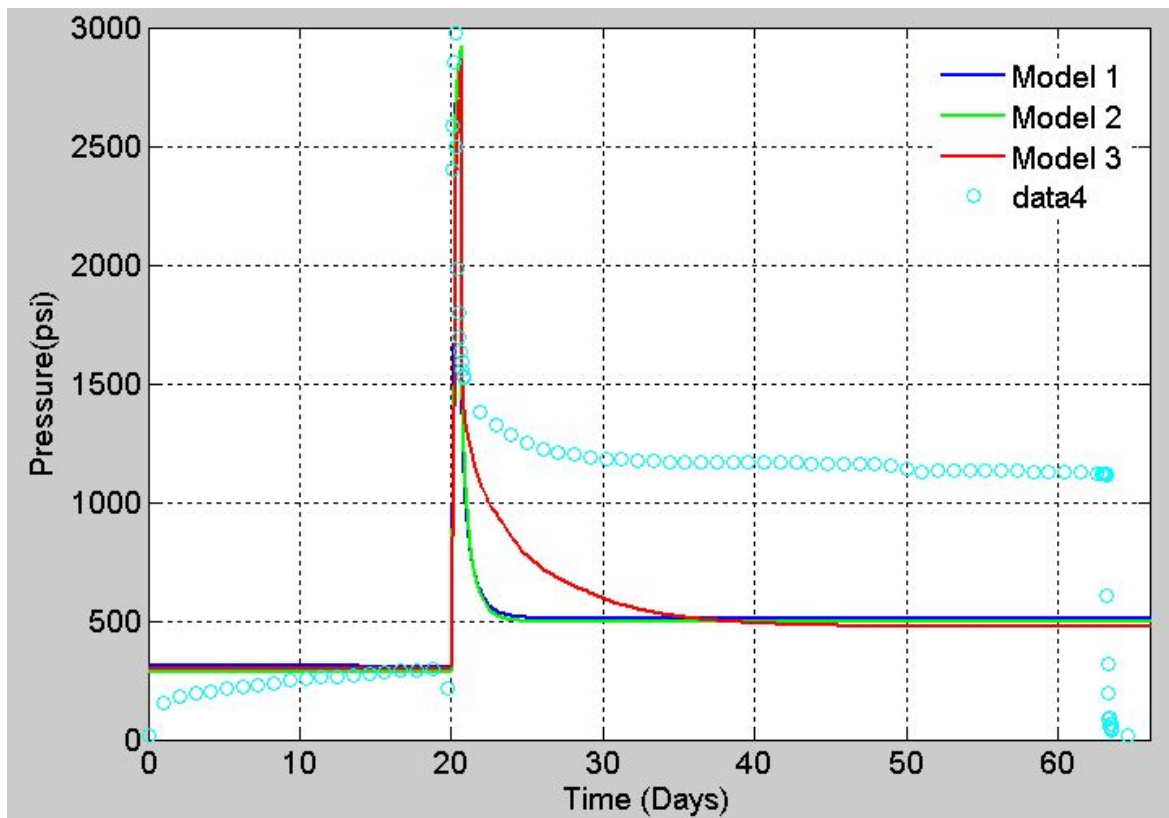


Figure B-2: Primary production and pressure response