

CoalSeq : Screening Model for ECBM and CO₂ Sequestration in Coal

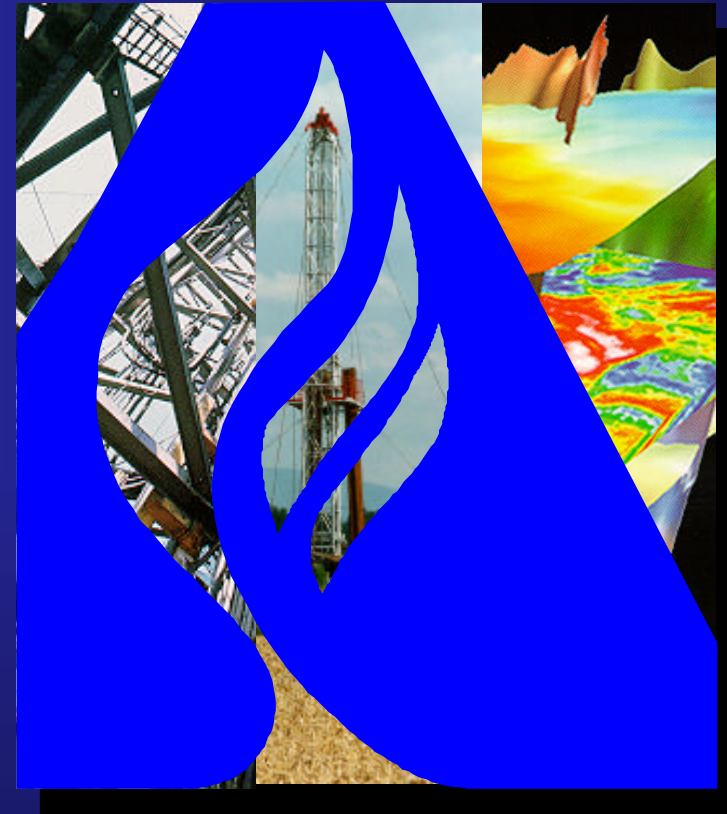
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Objectives

- Capture the technical findings of the Coal-Seq project in an easy-to-use tool that can predict the results of an ECBM/CO₂ sequestration project under a broad set of conditions and assumptions
- Put that tool directly in the hands of industry to facilitate project consideration and screening



Model Construction

- Consists of a database of reservoir simulation cases (2268)
- ARI's COMET3 was utilized to run the simulations
- Results are presented graphically and in tabular form
- Economic calculations can also be performed

Sensitivities

<u>Permeability</u>	<u>Spacing</u>	<u>Depth</u>	<u>Coal Rank</u>	<u>Injection Rate</u>	<u>Injection Gas</u>	<u>Injection Timing</u>
1 mD	40 acres	1,000 ft	High	10 Mscfd/ft	100 % CO2	First 7.5 years
10 mD	160 acres	5,000 ft	Medium	50 Mscfd/ft	100 % N2	Second 7.5 years
100 mD	640 acres	10,000 ft	Low	100 Mscfd/ft	50 % CO2 50 % N2	Continuous for 15 years

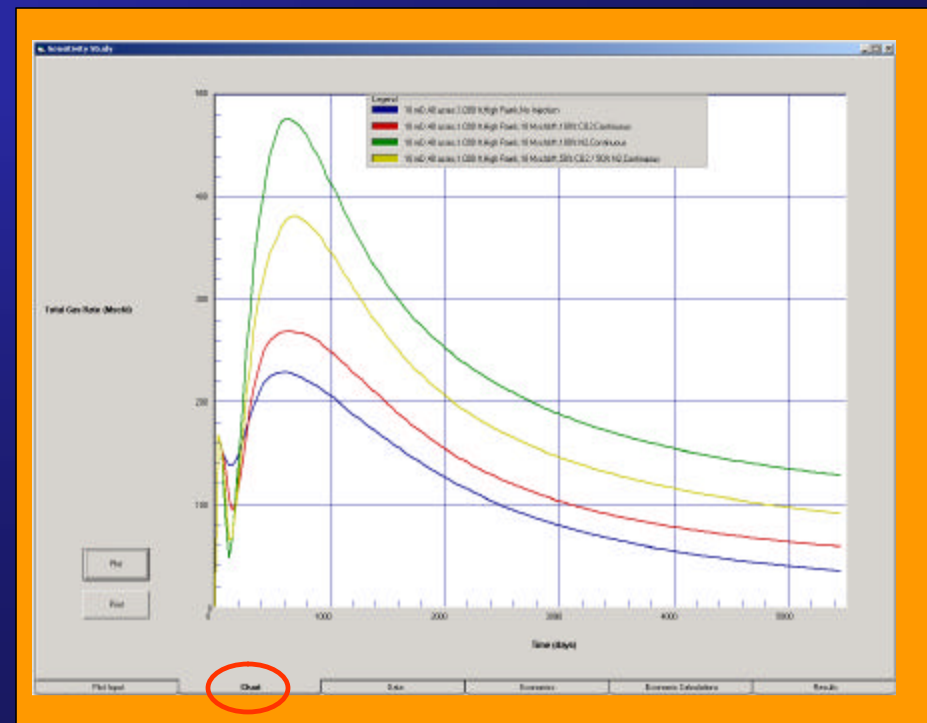
Note: Cases without injection can also be considered.

Screen Shots

The screenshot displays the 'Secondary Study' software interface. At the top, there are tabs for 'Line 1', 'Line 2', 'Line 3', and 'Line 4'. Below these are sections for 'Title', 'X-Axis', and 'Y-Axis'. The 'X-Axis' section includes 'History value', 'Minimum value', and 'Major Step'. The 'Y-Axis' section includes 'Minimum value', 'Maximum value', and 'Major Step'. There is a 'Manual' button. Below these are four columns for 'Main Case' and 'Comparison 1', 'Comparison 2', and 'Comparison 3'. Each column has dropdown menus for 'Permeability', 'Spacing', 'Depth', 'Coil Rank', and 'Injection Rate'. Below these are 'Get Data' buttons. At the bottom, there are four sections for 'Main Case Line 1', 'Comparison # 1', 'Comparison # 2', and 'Comparison # 3', each with 'Line Style' options and 'Thickness' input. A red circle highlights the 'PM Input' button at the bottom left.

Input Data

Plot



Screen Shots (Cnt'd)

Please choose the record case needed for the economic evaluation:

High Cost
 Condition 1
 Condition 2
 Condition 3

Run the IAH Investment Decision

Evaluation Time: [] Year (Maximum: 30 years)

Input Data:

CO2ND Capacity/Gasoline: [] \$/MMBtu
CO2ND Pipeline/Distribution: [] \$/MMBtu
Unit Cost: [] \$/unit

Other:

Input Unit/Spending: [] \$/MMBtu/Unit
Cost of Injected Gas: [] \$/MMBtu
Production Gas Processing: [] \$/MMBtu
CO2 Transportation/Compression: [] \$/MMBtu

Prices:

Gas Price: [] \$/MMBtu
Midwest FTU Cost: [] \$/MMBtu/Unit

Financial:

Net Revenue Interest: [] %
Production Term: [] years
Discount Rate: [] %
CO2 handling: [] \$/ton

Results:

Break-even Gas Price: [] \$/MMBtu
Break-even CO2 Cost: [] \$/MMBtu
Net Present Value: [] \$MM

Print Results

Input | Cost | Gas | **Economics** | Economic Calculations | Results

Economics

Availability

- The model will be available on the web site @ www.coal-seq.com
- The database is not completed yet, around 1000 simulations left to run.
- April 1 target release date