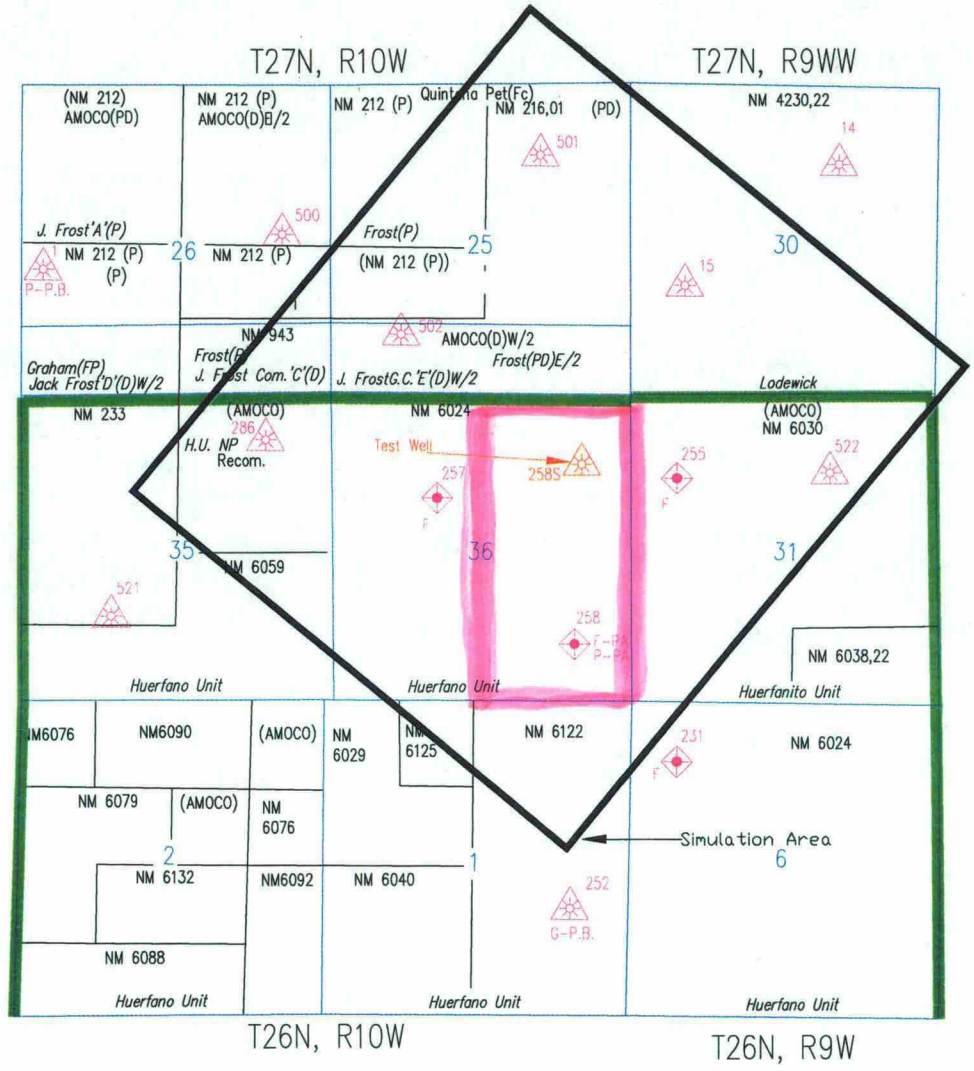
Pilot Testing/Simulation/Economic Results

- Five pilot wells drilled, tested, stimulated and produced
- All five pilot wells contained some coal layers with little depletion (as inferred from pressure data)
- Only 3 pilot areas modeled (Huerfano, Davis, SJ 28-6)
  - SJ 28-5 and Turner Federal areas believed to be analogous to Davis – lack of depletion, poor production of offset wells

Pilot Testing/Simulation/Economic Results: Huerfano Unit #258S Summary

- Sufficient data collected to evaluate pilot area for infill
- Original Gas-In-Place (320-acre) = 3.3 Bcf lowest of the pilot area
- 3 layer pressures collected:
  - Top coal layer shows little depletion, middle layer shows substantial depletion, bottom coal layer pressure (bad data)
- Successful history-match of infill well layer pressures and flowing pressures for 8 offset wells
- Scale-up modeling indicates 160-acre infill yields increase in reserves
- Infill recompletes are economic

Huerfano Unit #258S Pilot Area



Pilot Testing/Simulation/Economic Results: Huerfano Unit #258S Detail

I. Incorporation of pilot well/offset well test data:

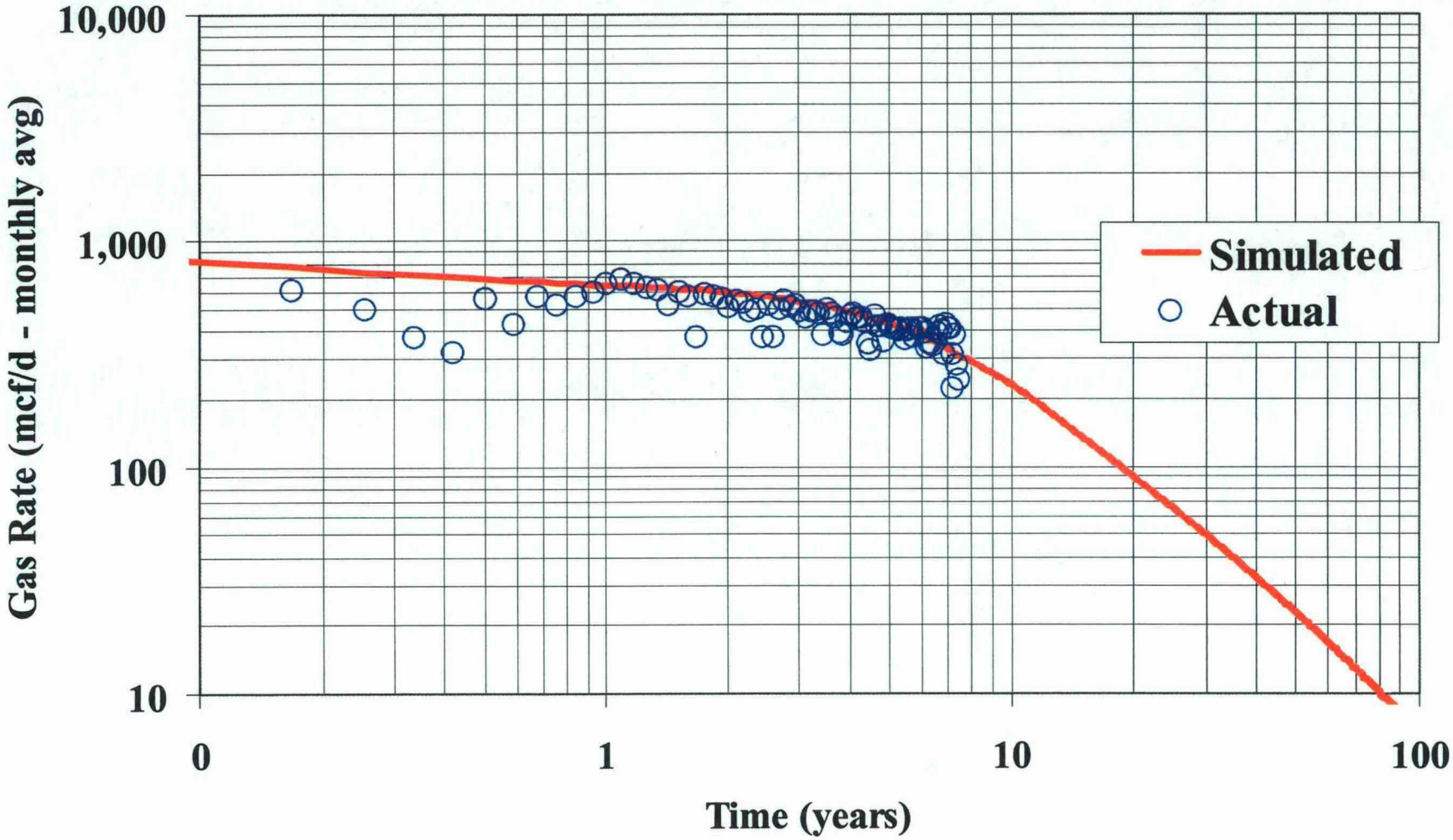
- Pilot well openhole logs used to complete pilot area geologic model – coal-layer thickness and bulk density (16-section)
- Adsorption isotherm data and coal densities used to develop correlation between isotherm parameters and coal density – OGIP calculations
- Pilot well multi-layer pressures used as parameter to history-match
- Pilot well production data used as parameter to history-match
- Pilot offset well type-curve analysis used to constrain composite permeability in simulation model

Pilot Testing/Simulation/Economic Results: Huerfano Unit #258S Detail

II. History-match pilot offset wells (single-well) using (EXCEL®) tank model and type-curve results

- Type-curve estimated composite permeability and skin factor yield reasonable performance predictions
- Constrain reservoir simulation to have composite permeability within range of type-curve estimates

Huerfano Unit NP #255 Tank Model Match



Pilot Testing/Simulation/Economic Results: Huerfano Unit #258S Detail

III. History-match pilot offset wells (multi-well) using ECLIPSE® numerical reservoir simulator

Model Parameters:

- Model grid: 47 x 57 x 3 (3 vertical layers, dual porosity), average gridblock size = 206 ft x 202 ft
- Model area: 2561 acres, incorporating 8 offset producing wells + infill well
- Each vertical layer (3) in model corresponds to coal layer for which pressure measured at infill well

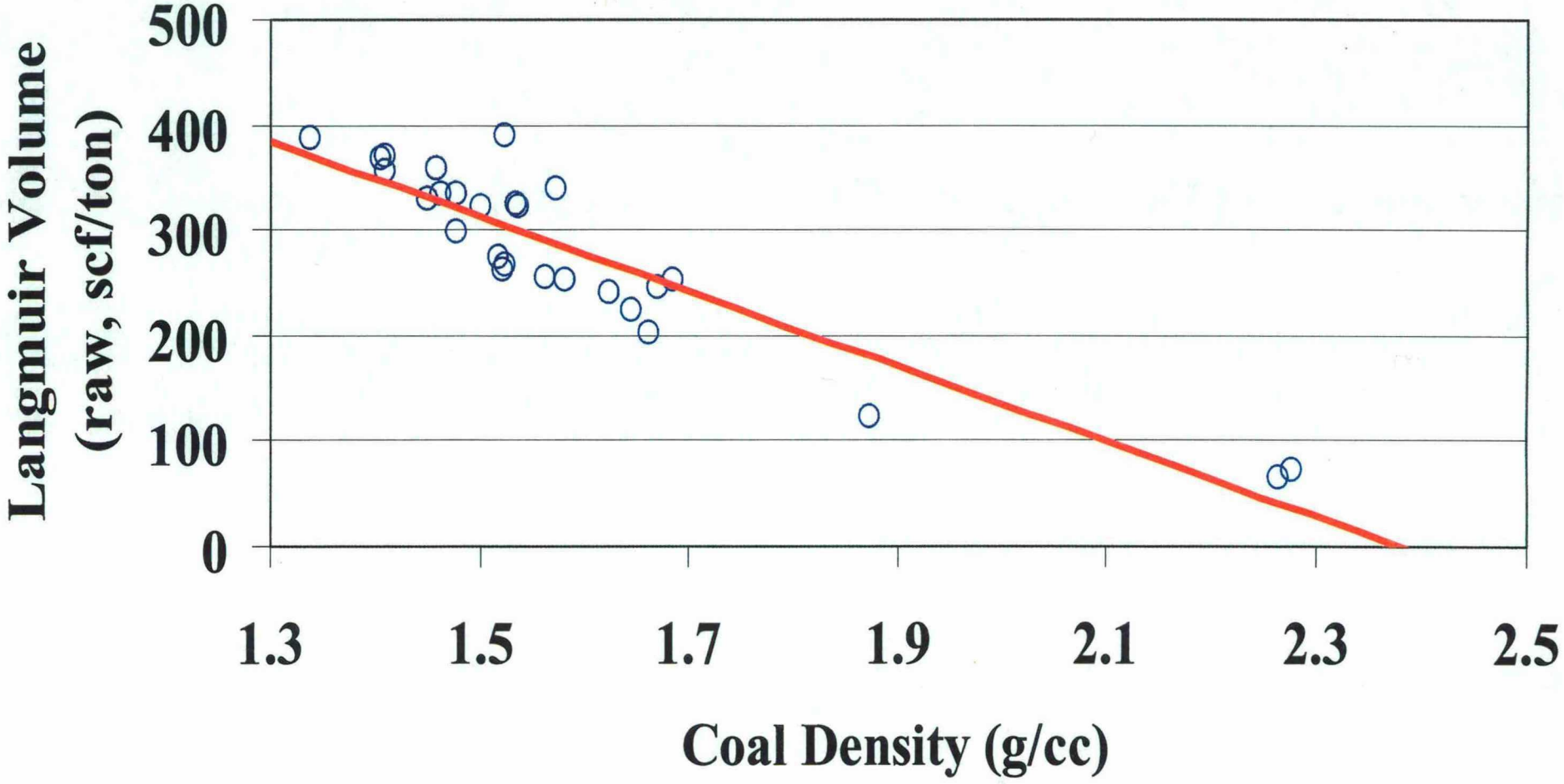
Pilot Testing/Simulation/Economic Results: Huerfano Unit #258S Detail

III. History-match pilot offset wells (multi-well) using ECLIPSE® numerical reservoir simulator (cont'd)

Reservoir Parameters:

- Coal layer OGIP calculated from Isotherm vs. Coal Density Relationship, using average density for layer
- Coal layer permeability calculated from assumed Permeability vs. Coal Density relationship, using average density for Layer
- Other reservoir properties obtained from core data and literature values

Isotherm vs. Coal Density Relationship



* Average Original Gas-In-Place per 320-acre ~ 3.3 Bcf

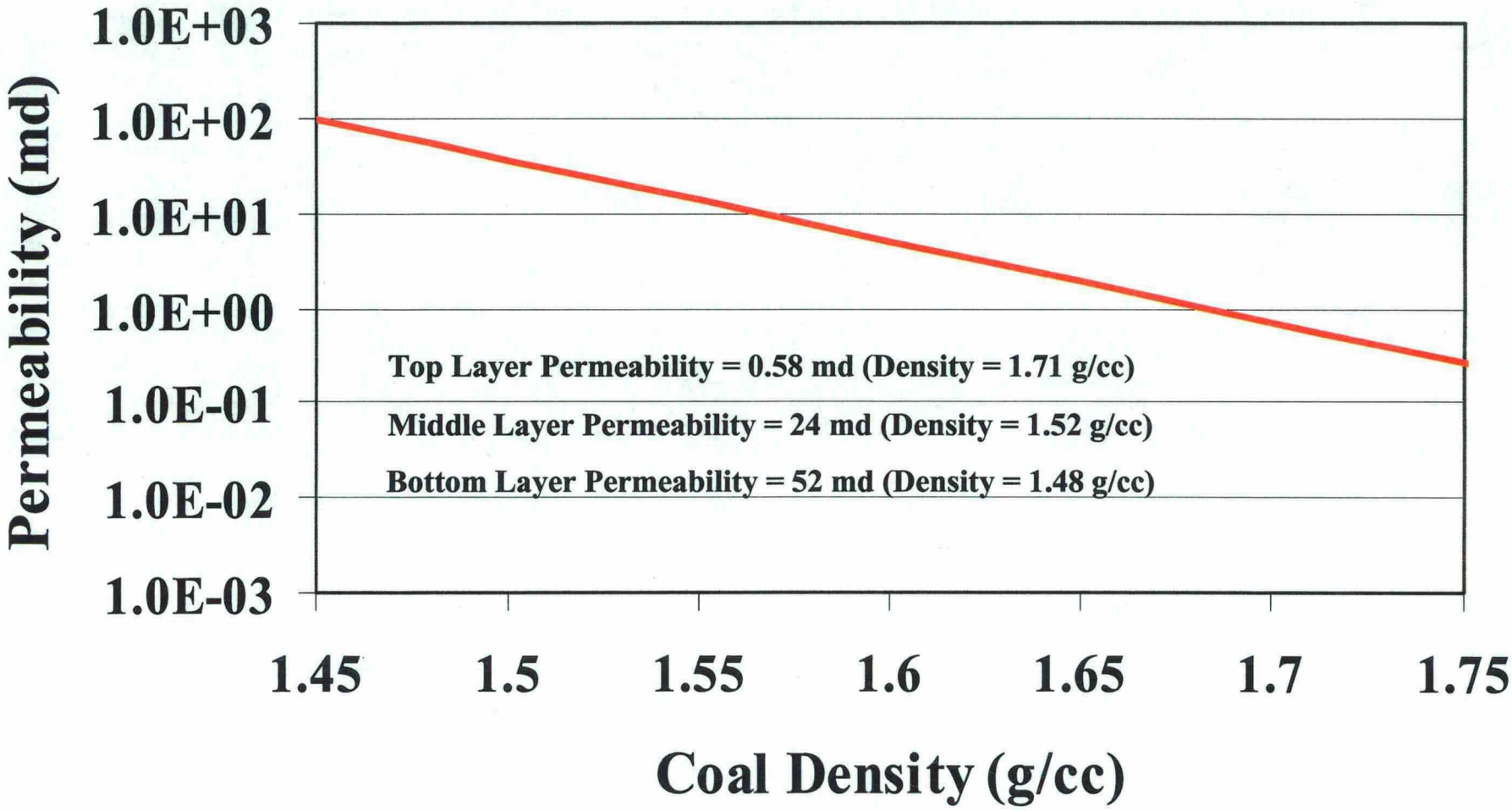
Pilot Testing/Simulation/Economic Results: Huerfano Unit #258S Detail

III. History-match pilot offset wells (multi-well) using ECLIPSE® numerical reservoir simulator (cont'd)

History-Matching:

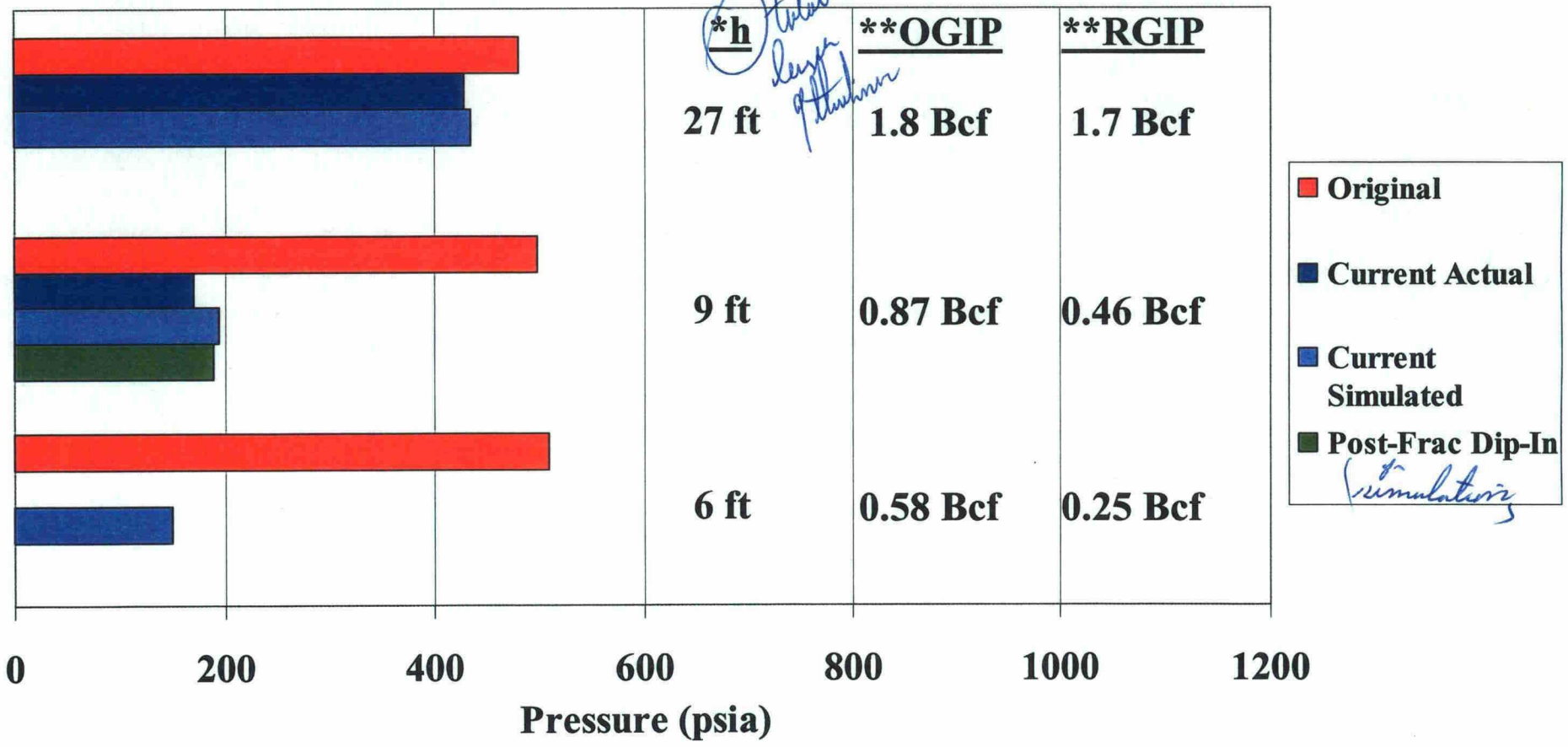
- Simulation driven by historical monthly gas rate (offset wells)
- Assumed single-phase flow
- Permeability vs. Coal Density relationship adjusted to match pressures at infill well location, and flowing pressures of offset wells
- Some skin factor adjustment also required

Coal Permeability vs. Coal Density Relationship



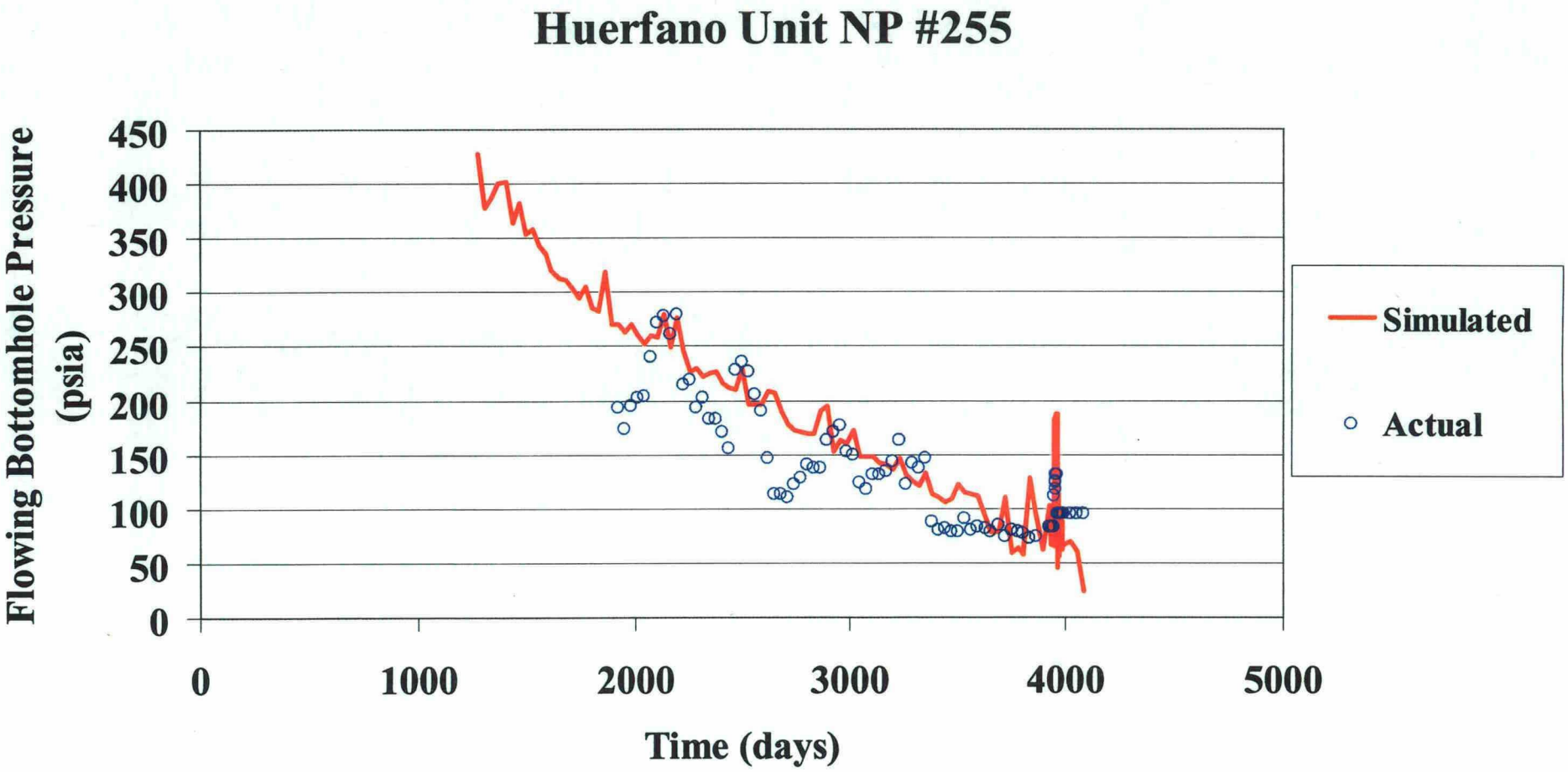
Infill Well Layer Pressure Match

Huerfano Unit #258S Layer Pressures



* Thickness At Infill Well **Model Average per 320

Offset Well Flowing Pressure Match

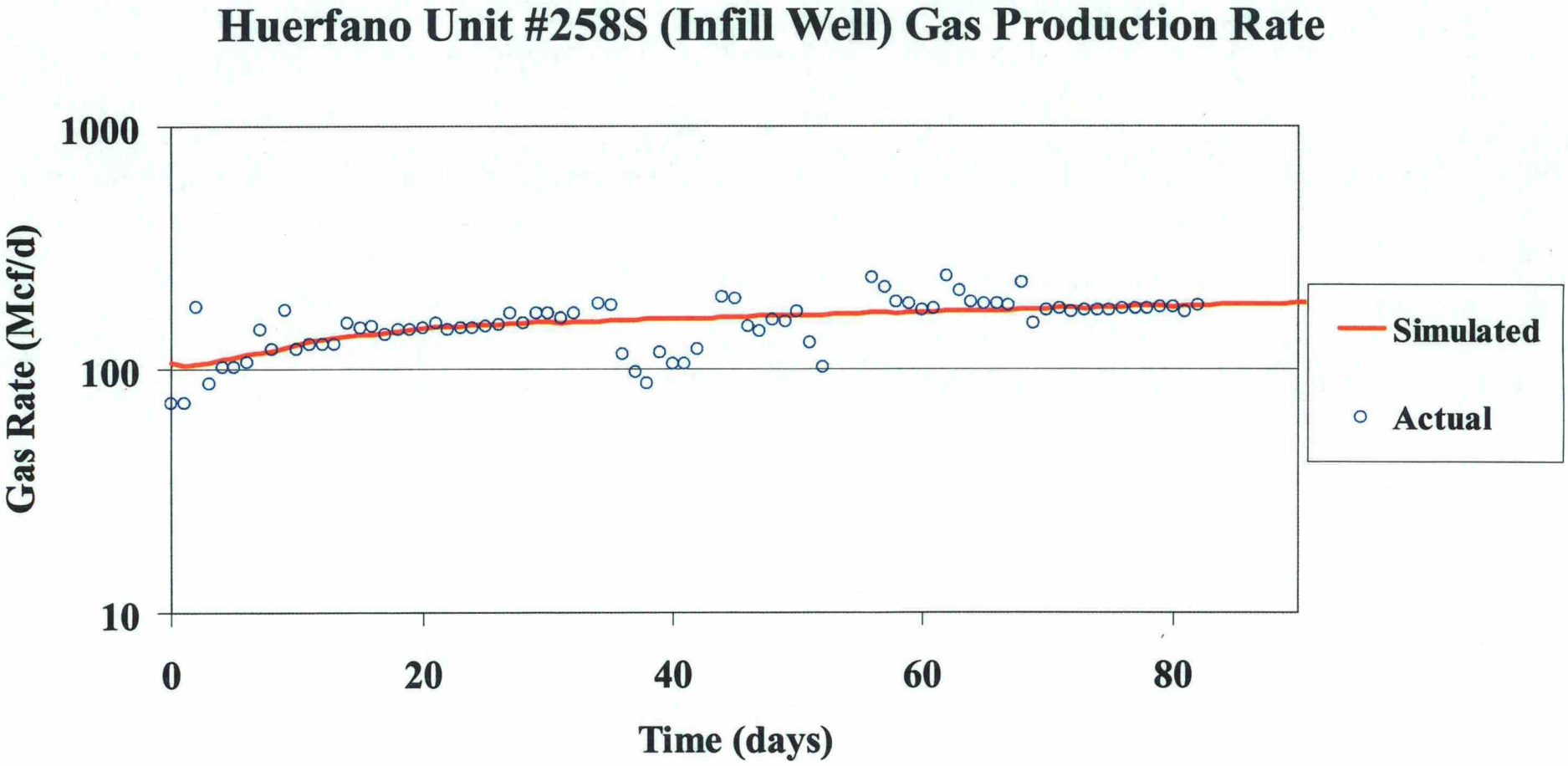


Pilot Testing/Simulation/Economic Results: Huerfano Unit #258S Detail

IV. History-match infill well production using ECLIPSE®

- Simulation driven by scheduled flowing pressure (estimated from measured casing pressure)
- Skin factor adjusted within range of offset wells

Infill Well Production Match



*Corrected to 24 hour flow rate

Pilot Testing/Simulation/Economic Results: Huerfano Unit #258S Detail

V. Use scale-up models (16-section) to forecast infill well incremental and accelerated reserves

Model Parameters:

- Model grid: 40 x 40 x 3 (3 vertical layers, dual porosity)
- Model area: 16 Sections (10240 acres)
- Parent (32 wells) and Infill (32 wells) follow regular pattern

Pilot Testing/Simulation/Economic Results: Huerfano Unit #258S Detail

V. Use scale-up models (16-section) to forecast infill well incremental and accelerated reserves (cont'd)

Reservoir Parameters:

- Average coal layer thickness = history-match model
- Coal layer permeability = history-match model
- All other reservoir properties = history-match model

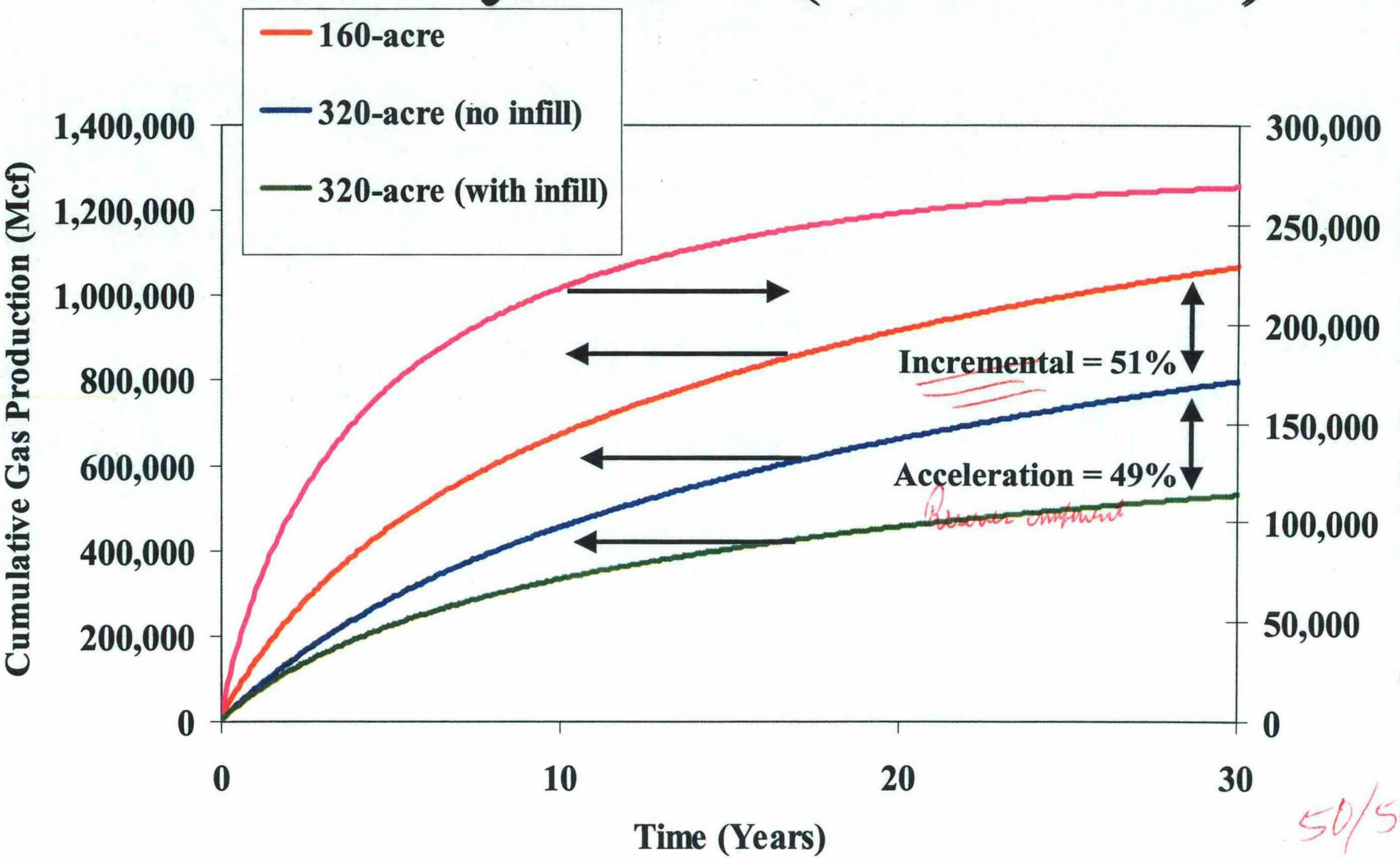
Pilot Testing/Simulation/Economic Results: Huerfano Unit #258S Detail

V. Use scale-up models (16-section) to forecast infill well incremental and accelerated reserves (cont'd)

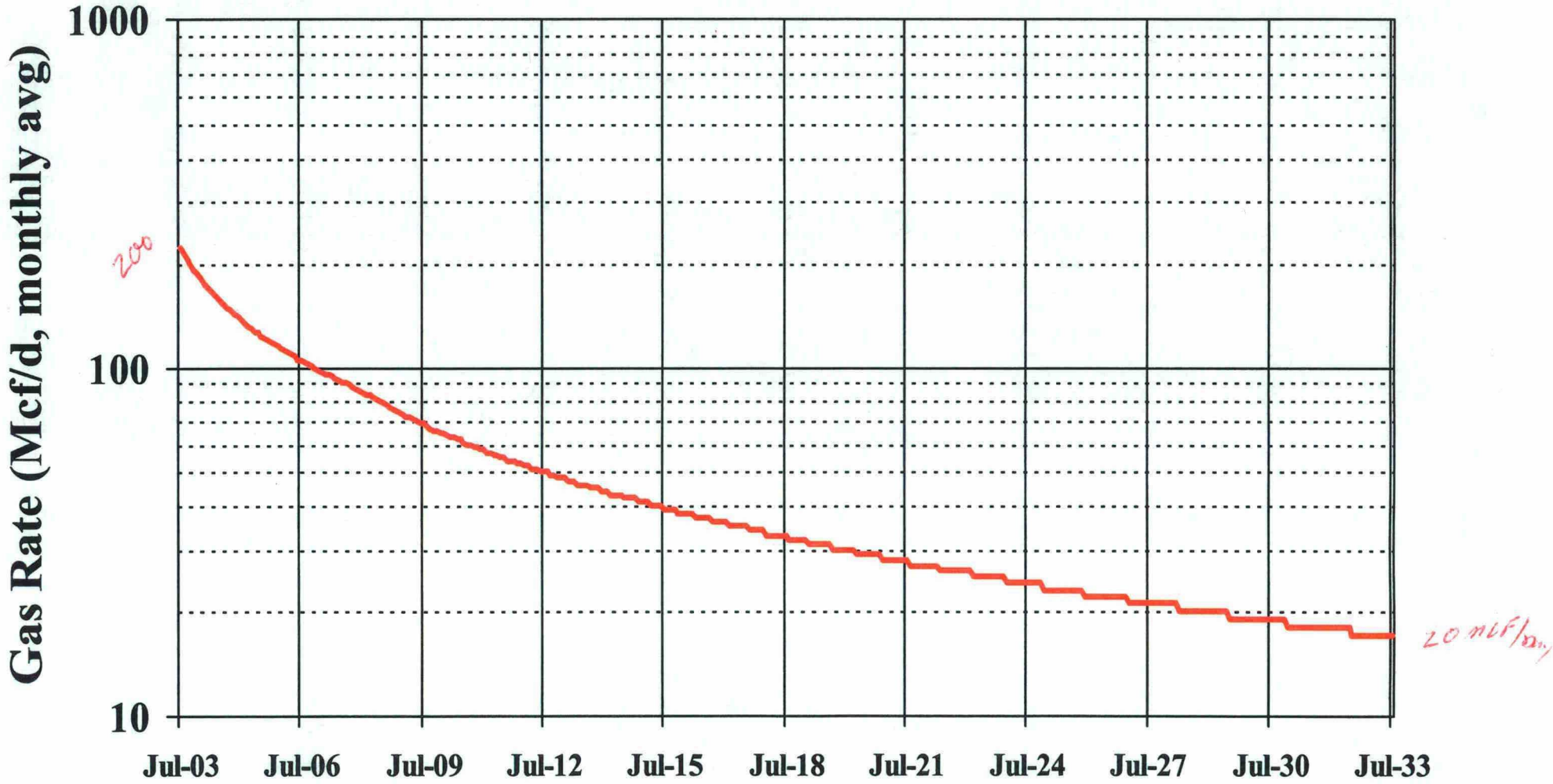
Parent (320-acre) and Infill (160-acre) Forecasting:

- Initial layer pressures = Huerfano Unit #258S (infill well) pressures at end of history-match
- Parent wells (no infill) forecast out to year 2033
- Infill + parent wells forecast out to year 2033, with infill wells starting in year 2003
- Simulation driven by flowing bottomhole pressure

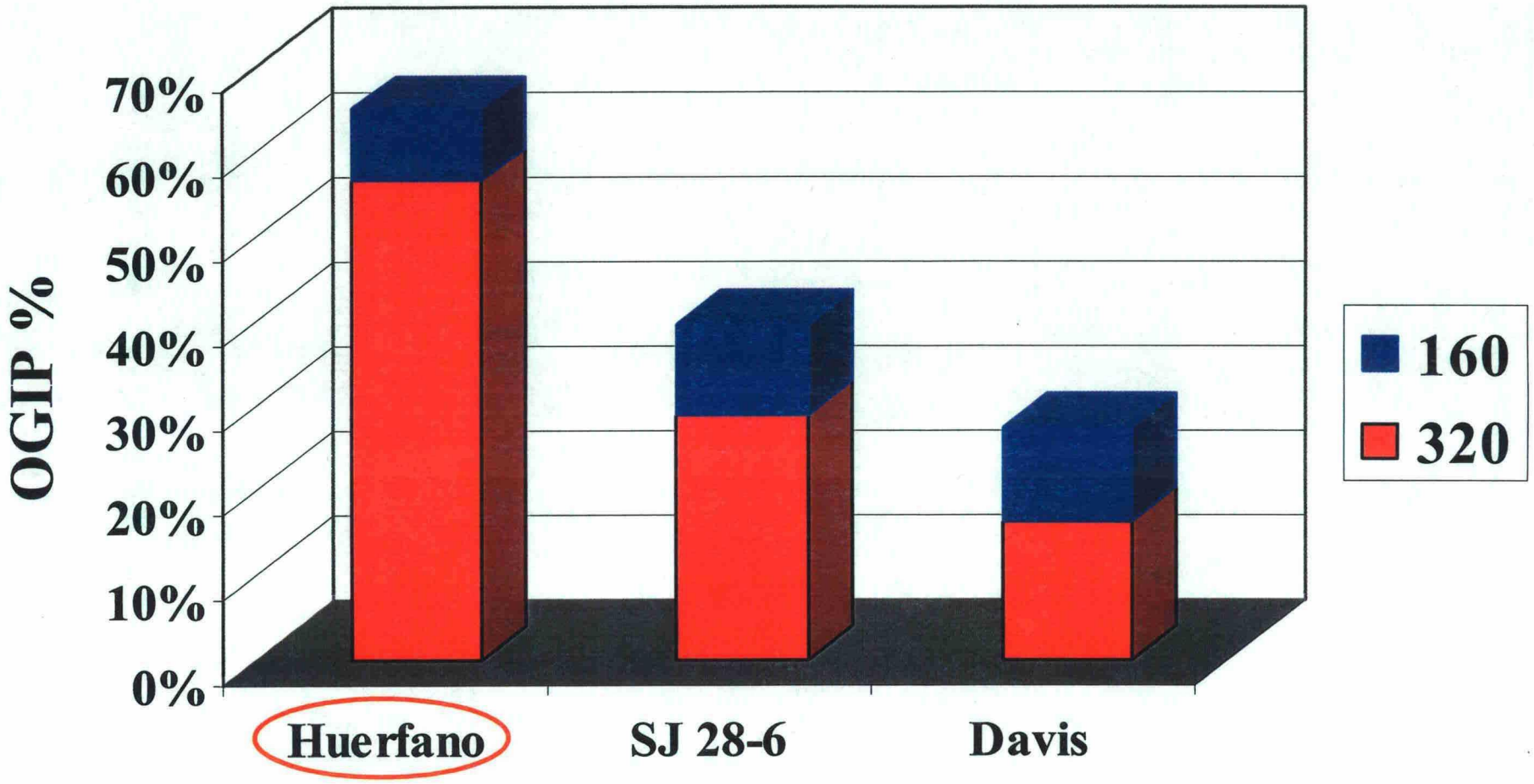
Huerfano Area Increased Density Recovery Profile (2003 – 2033)



Huerfano Area Infill Well Projection



Additional Completions Result in Additional Recovery



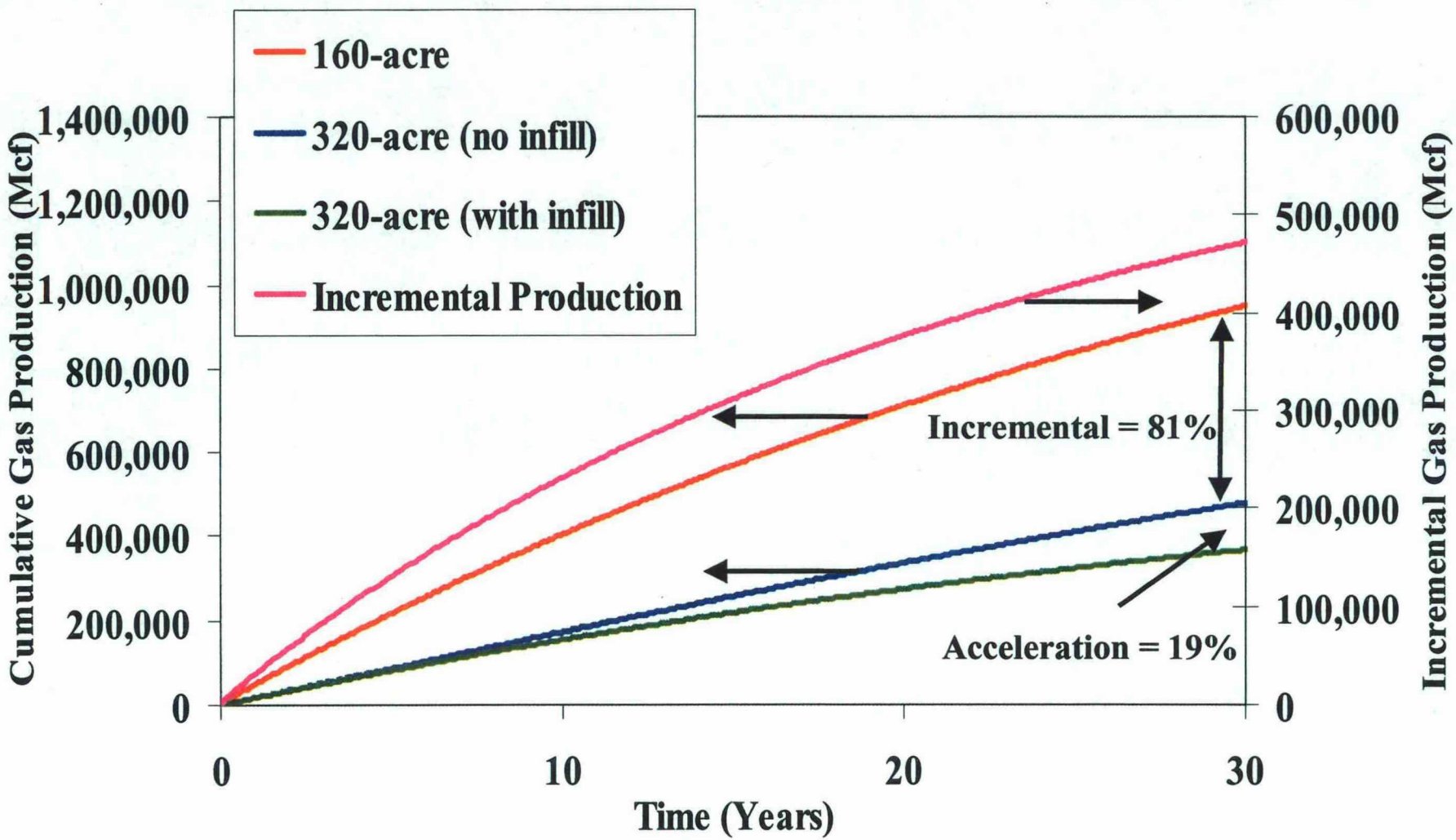
Infill Recompletes Are Economic

- After-tax Present Value = $13.0 M (Disc. @ 10%)
- Primary economic inputs/assumptions:
  - Incremental economics (160-acre case – 320-acre case)
  - Gas price = $3.25/mmbtu (NYMEX)
  - Operating costs = $1060/well/month
  - Capital costs = $200 M
  - GWI/NRI = 100/84

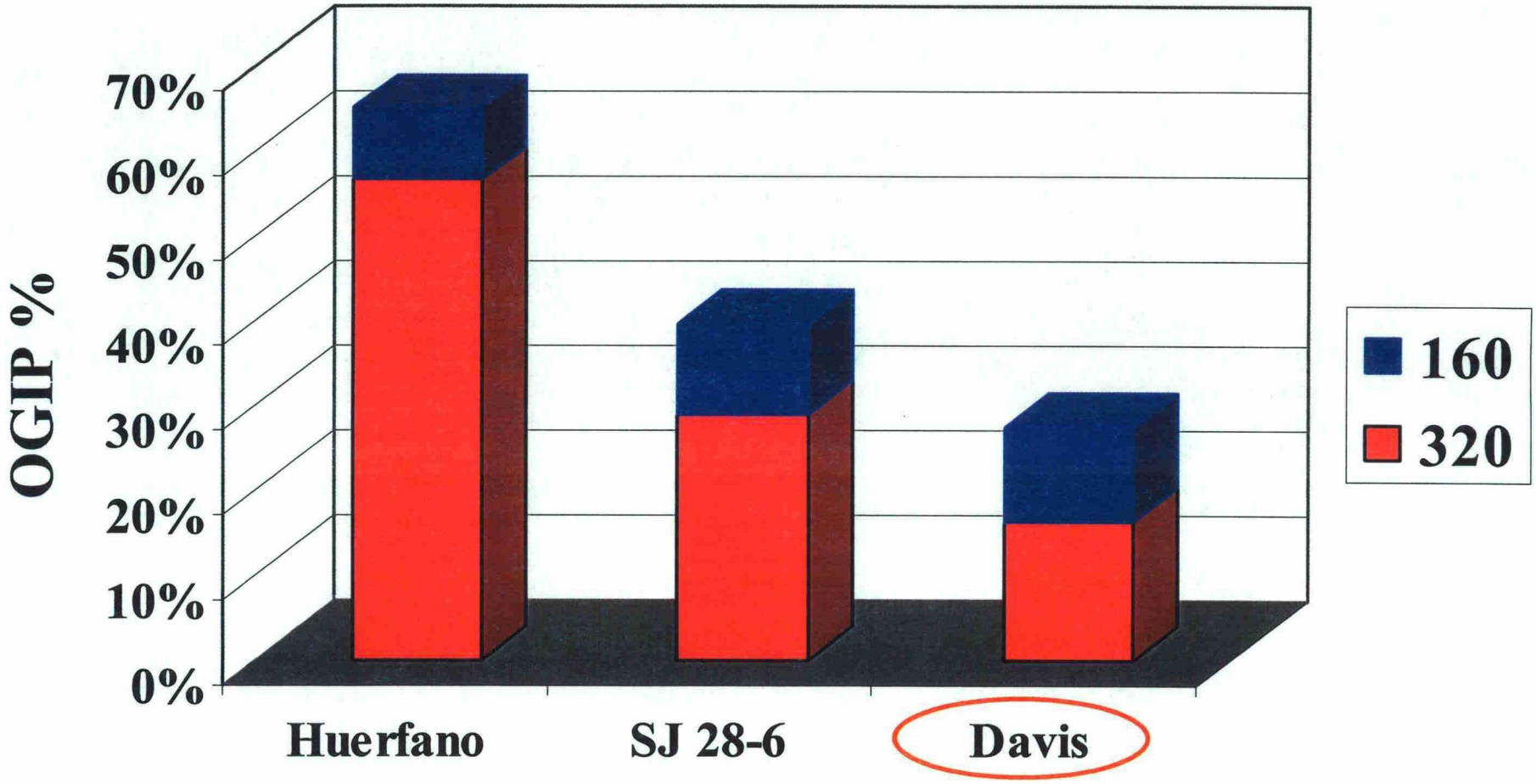
Pilot Testing/Simulation/Economic Results: Davis #505S Summary

- Sufficient data collected to evaluate pilot area for infill
- Original Gas-In-Place (320-acre) = 4.3 Bcf
- 4 layer pressures collected:
  - All coal layers show little depletion
- 5-layer, dual porosity simulation model used
- Successful history-match of infill well layer pressures and flowing pressures for 4 offset wells
- Scale-up modeling indicates 160-acre infill yields increase in reserves
- Infill recompletes are economic

Davis Area Increased Density Recovery Profile (2003 – 2033)



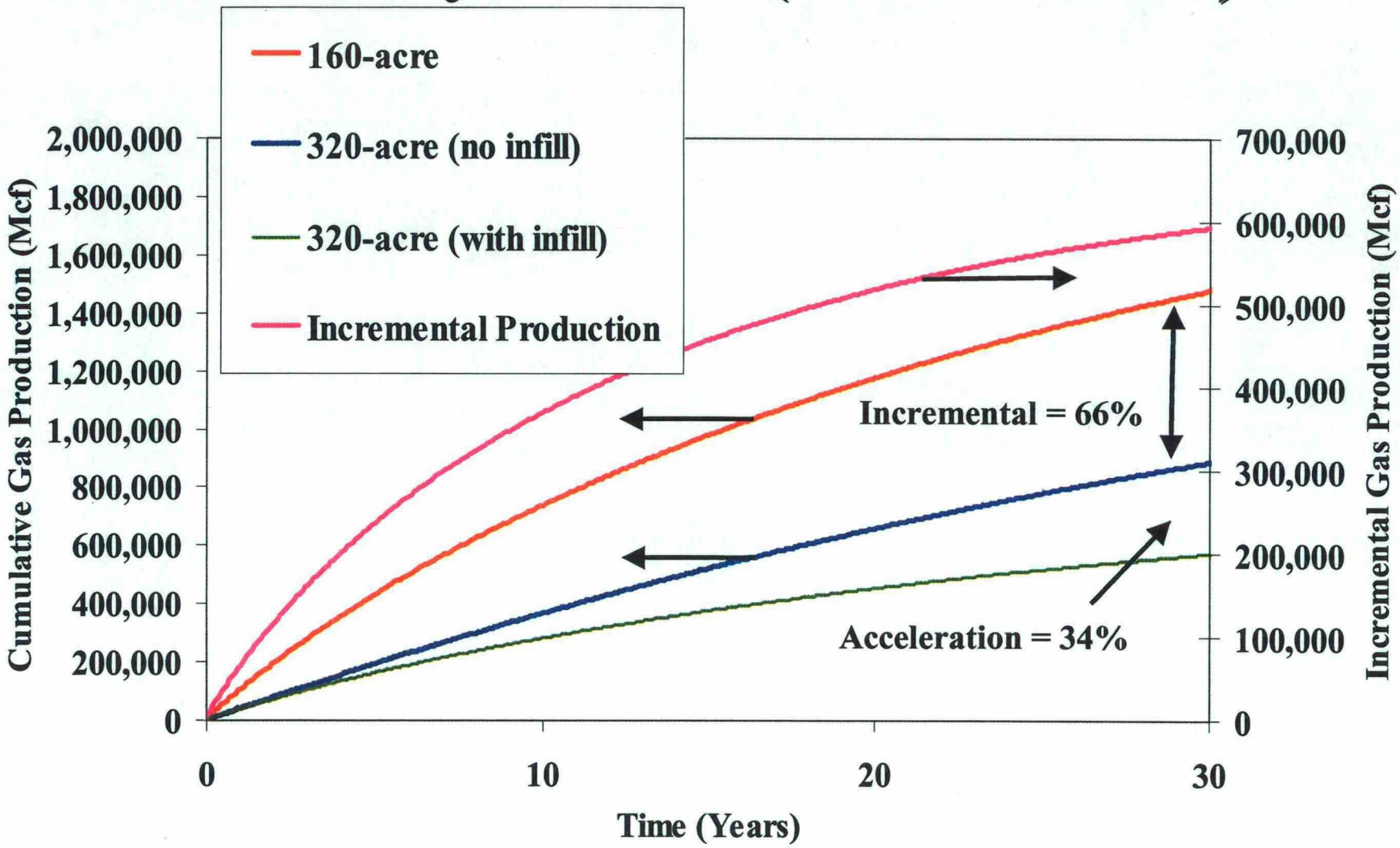
Additional Completions Result in Additional Recovery



Pilot Testing/Simulation/Economic Results: SJ 28-6 Unit #418S Summary

- Sufficient data collected to evaluate pilot area for infill
- Original Gas-In-Place (320-acre) = 5.6 Bcf
- 4 layer pressures collected:
  - Top coal layer shows little depletion, other 3 layers show substantial depletion
- 13-layer, dual porosity simulation model used
- Successful history-match of infill well layer pressures and flowing pressures for 4 offset wells
- Scale-up modeling indicates 160-acre infill yields increase in reserves
- Infill recompletes are economic

SJ 28-6 Area Increased Density Recovery Profile (2003 – 2033)



Additional Completions Result in Additional Recovery