



Role of Steamflooding Technology in Increasing Heavy Oil Production & Reserves



Kevin Kimber
Heavy Oil Focus Area Manager
Chevron Energy Technology Company

CSIS Energy Program
Upstream Technology Panel Discussion
May 1, 2006

Chevron participates in nearly every heavy oil basin in the world



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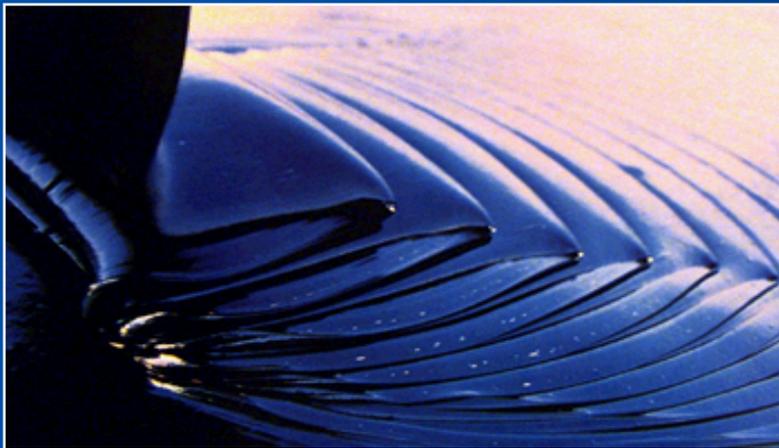


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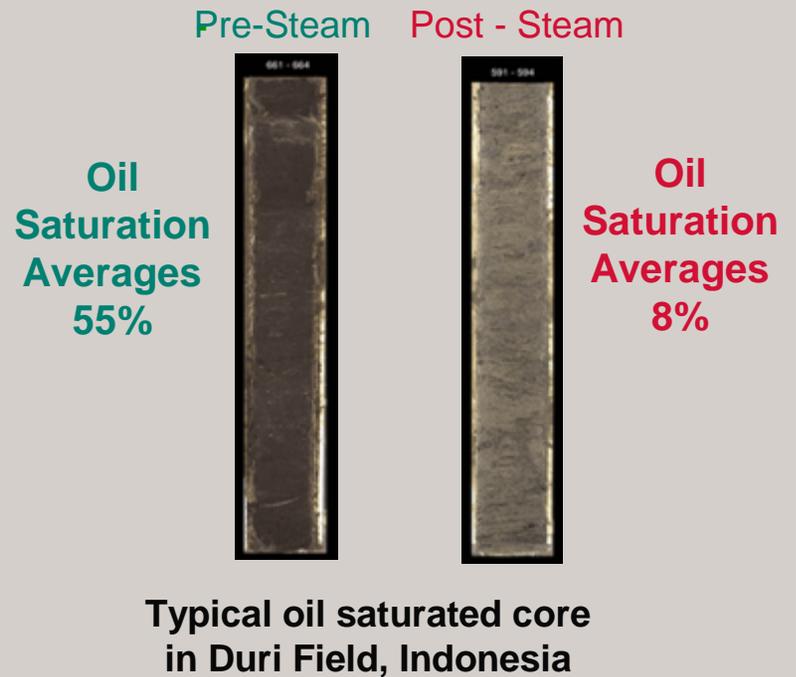


Why Steamflood?

- Increases reserves by a factor of 2 – 10 times compared to primary heavy oil recovery.
- Production is both incremental and accelerated



Mechanism	Heavy Oil Recovery
Primary	5 - 15%
Steam Flood	50 - 80%



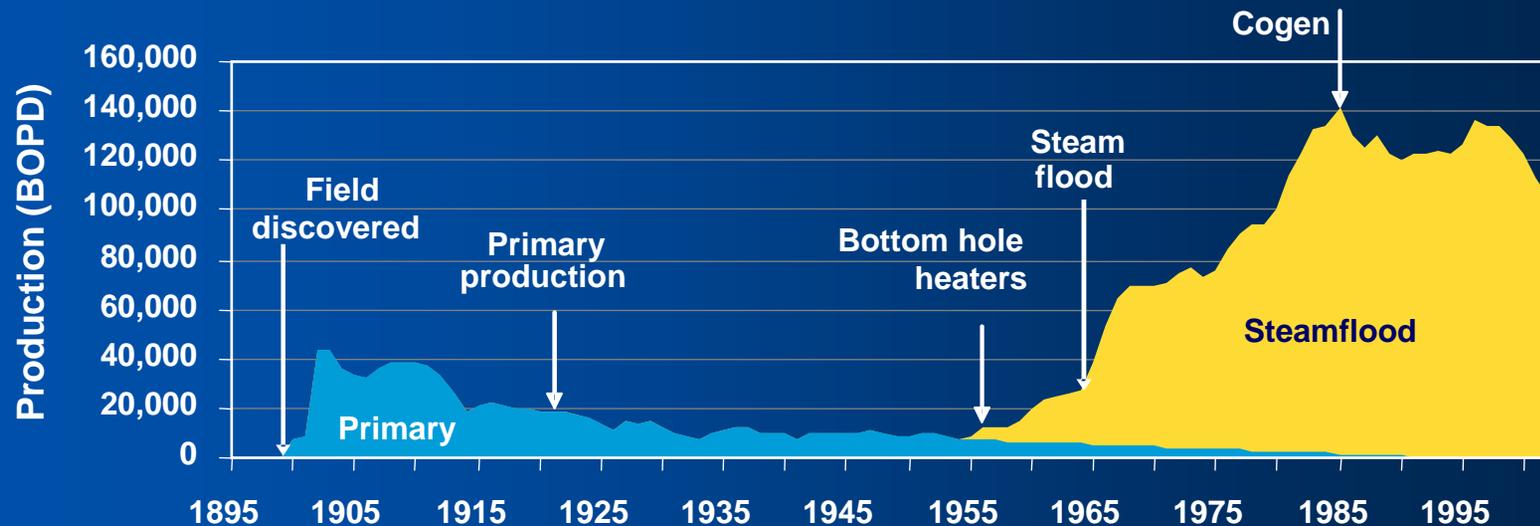
50 Years of Thermal Experience at Work

Kern River Field, California



Kern River Field, California

- Steamflood
- 87,000 BOPD
- 230,000 BSPD
- 9,000 wells
- Recovery will approach 80%



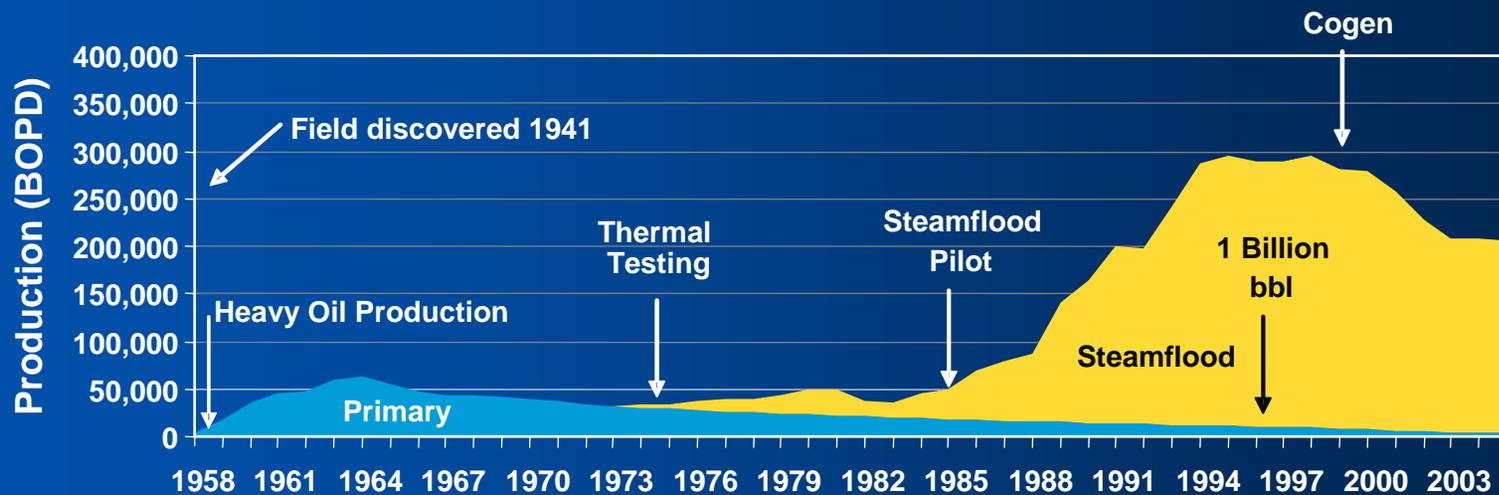
Applying 50 Years of Thermal Experience

Duri Field, Indonesia



Duri Field, Indonesia

- Steamflood
- 205,000 BOPD
- 1,000,000 BSPD
- 1.8 BBO Cum Prod
- 6,000 wells

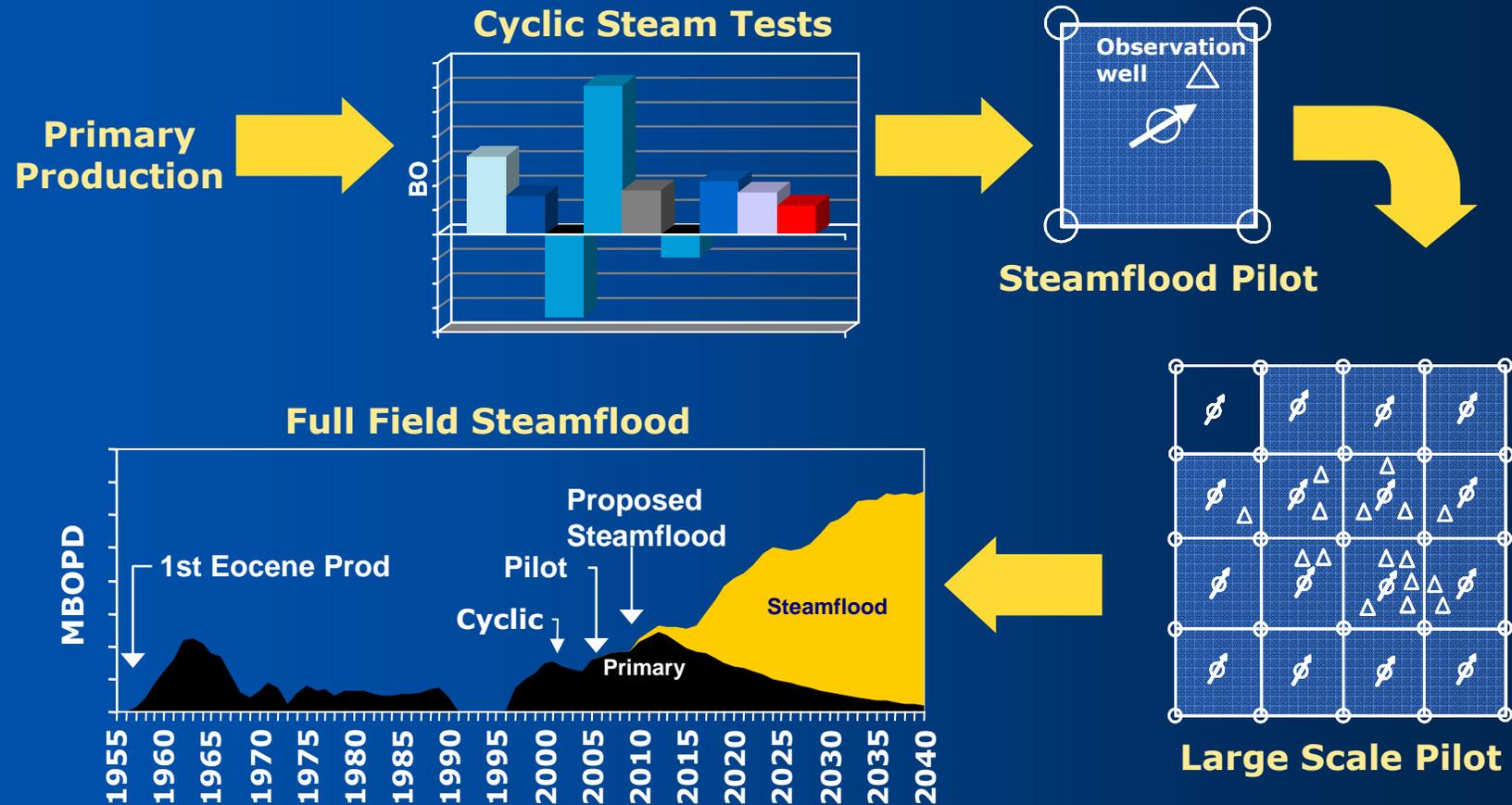


Extending 50 Years of Thermal Experience

Potential PNZ Carbonate Steam Flood Development



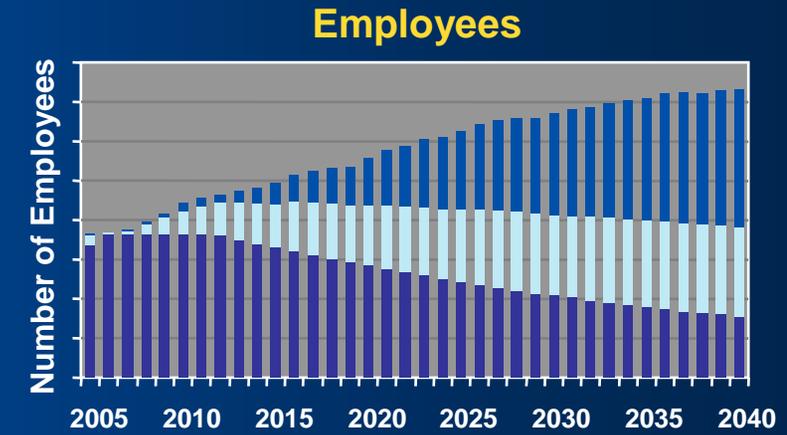
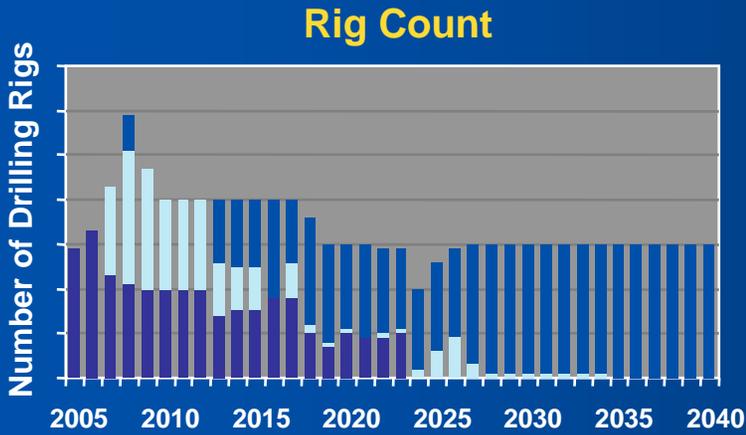
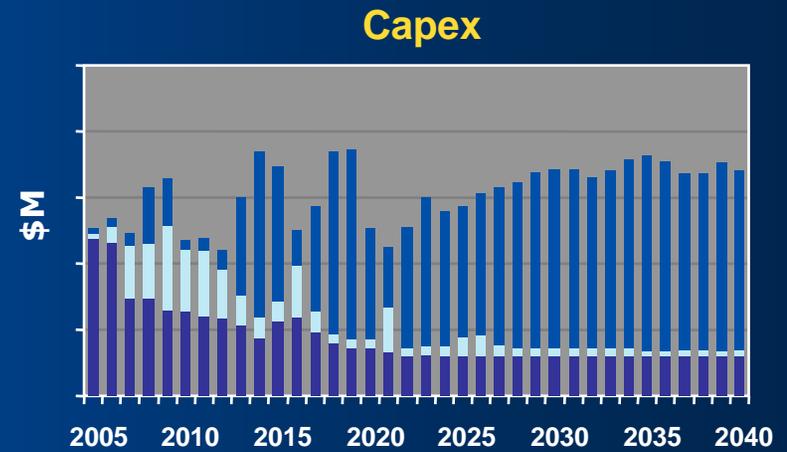
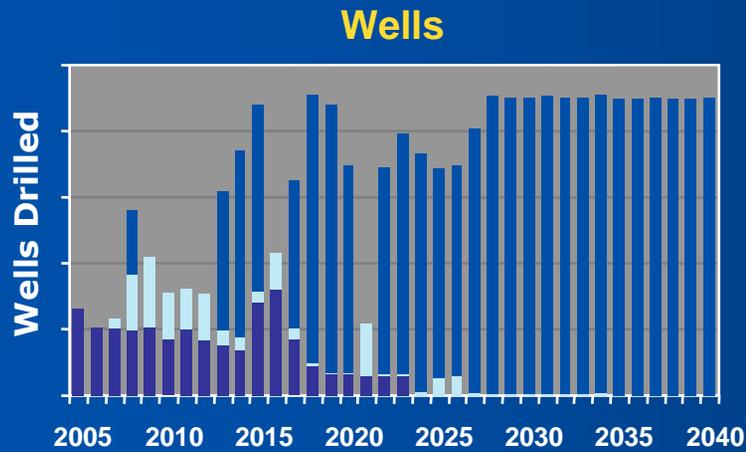
Moving Heavy Oil Production to a much higher level over the next 30 years





What Changes are Needed?

PNZ Resource Outlook with Steamflood

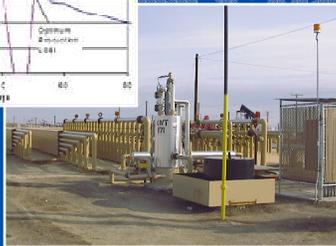
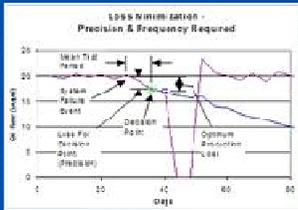


BPLAN **Additional Projects** **Steamflood**

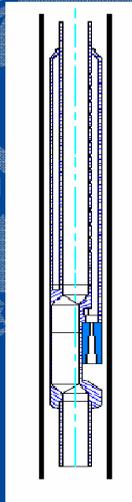
What Capabilities Does Steamflood Require?

Technology Drives Performance

Deploying Technology, Processes, Tools & Best Practices



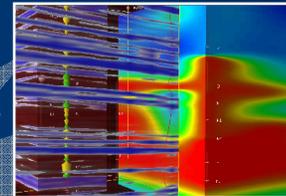
Well Gauging and Loss Minimization



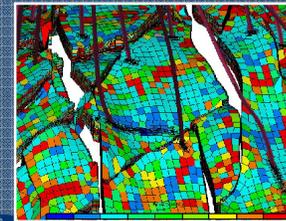
Downhole Steam Control



Heavy Oil Networks and Forum



Heat Management



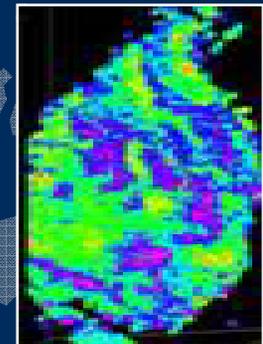
Advanced Thermal Simulation



Steam Generation



Surface Steam Distribution



Reservoir Surveillance & Characterization

Collaborating to Apply our Worldwide Steamflood Experience to the PNZ



- Deploy advanced technology, processes & best practices from California and Duri
- Extend technology into PNZ heavy oil carbonate reservoir through phased steamflood pilots
- Reservoir and heat management are critical
- Efficient operating practices lead to high recoveries
- Develop and transfer critical Organizational Capabilities

