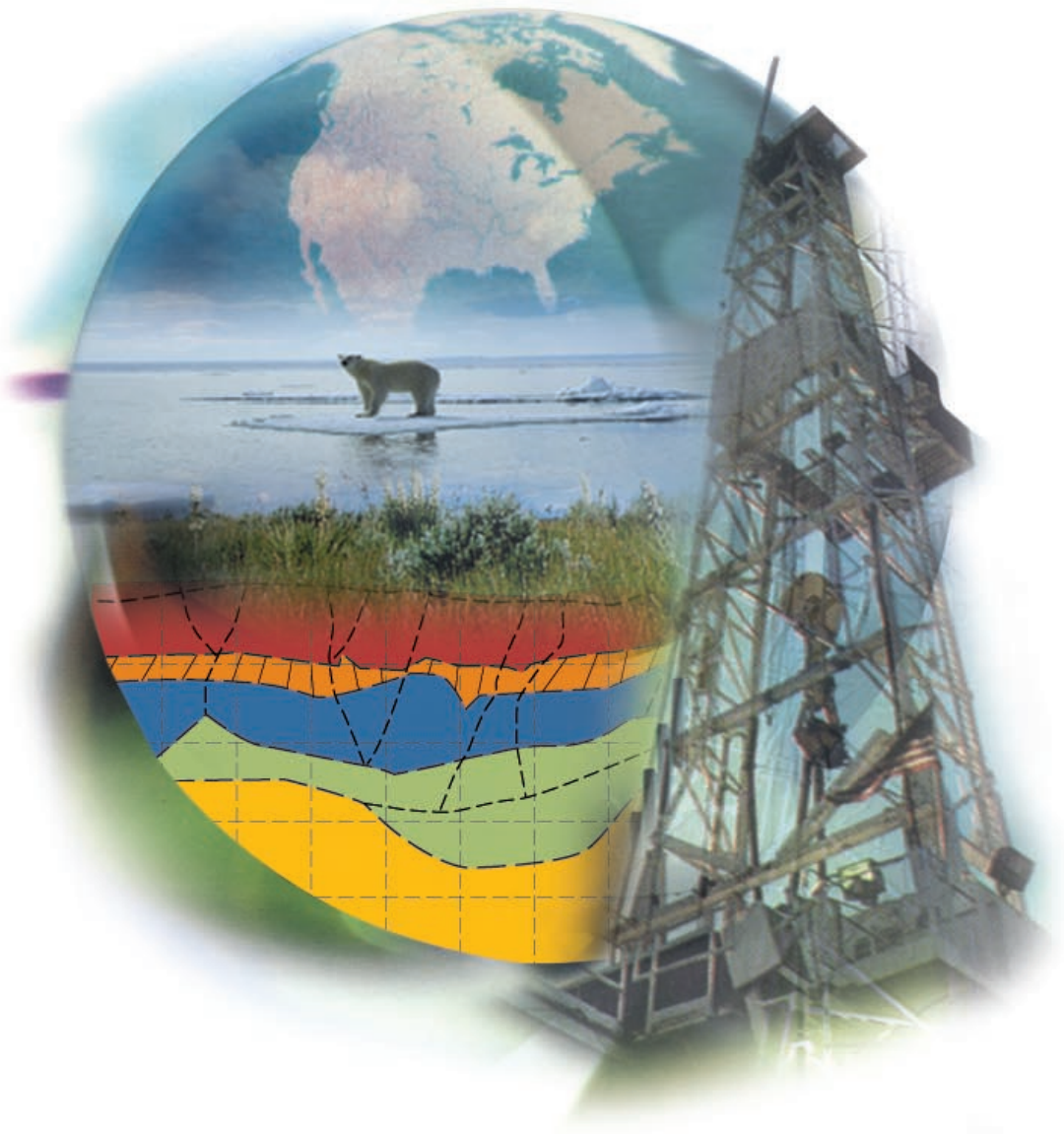
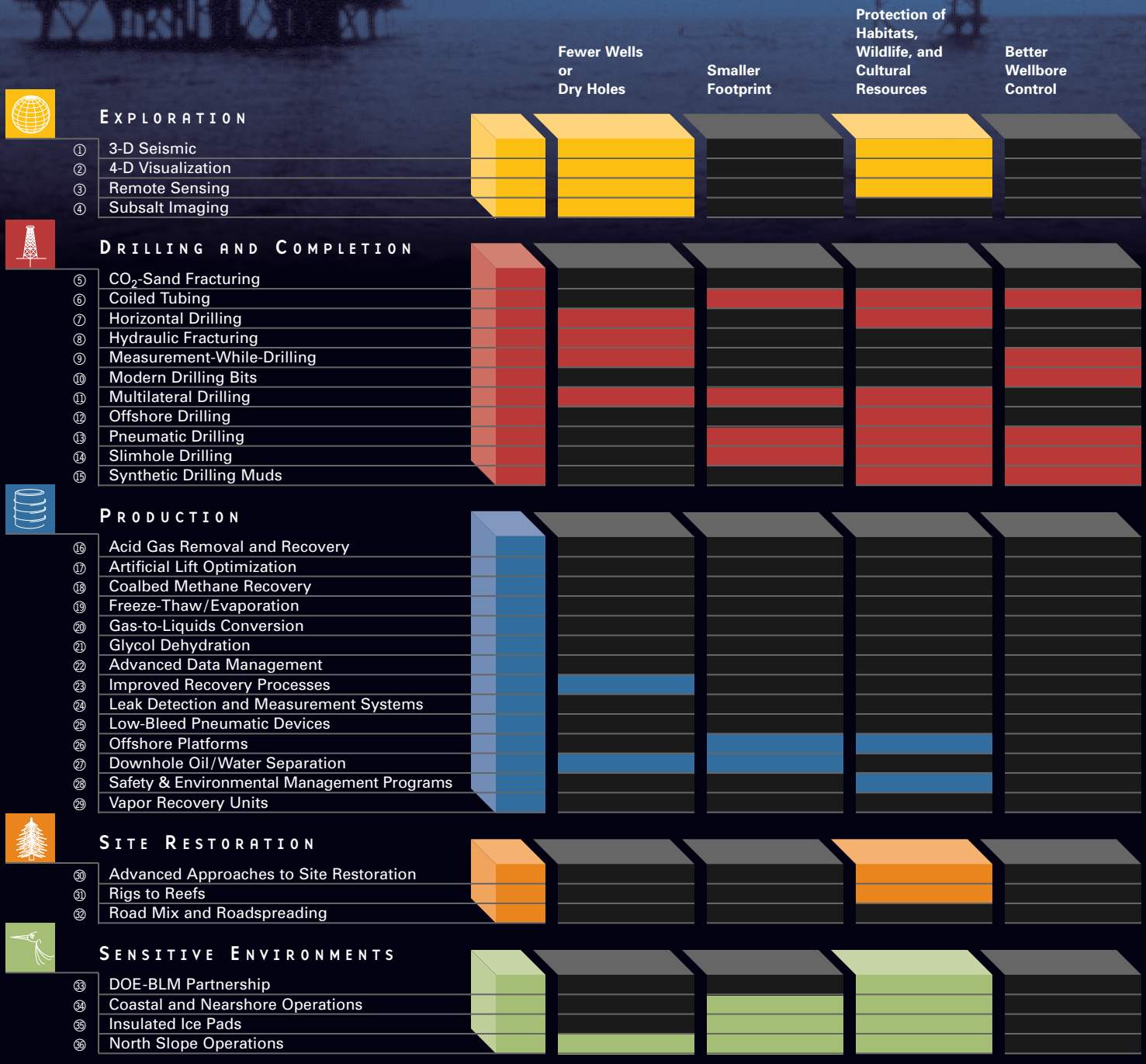
U.S. Department of Energy
Office of Fossil Energy

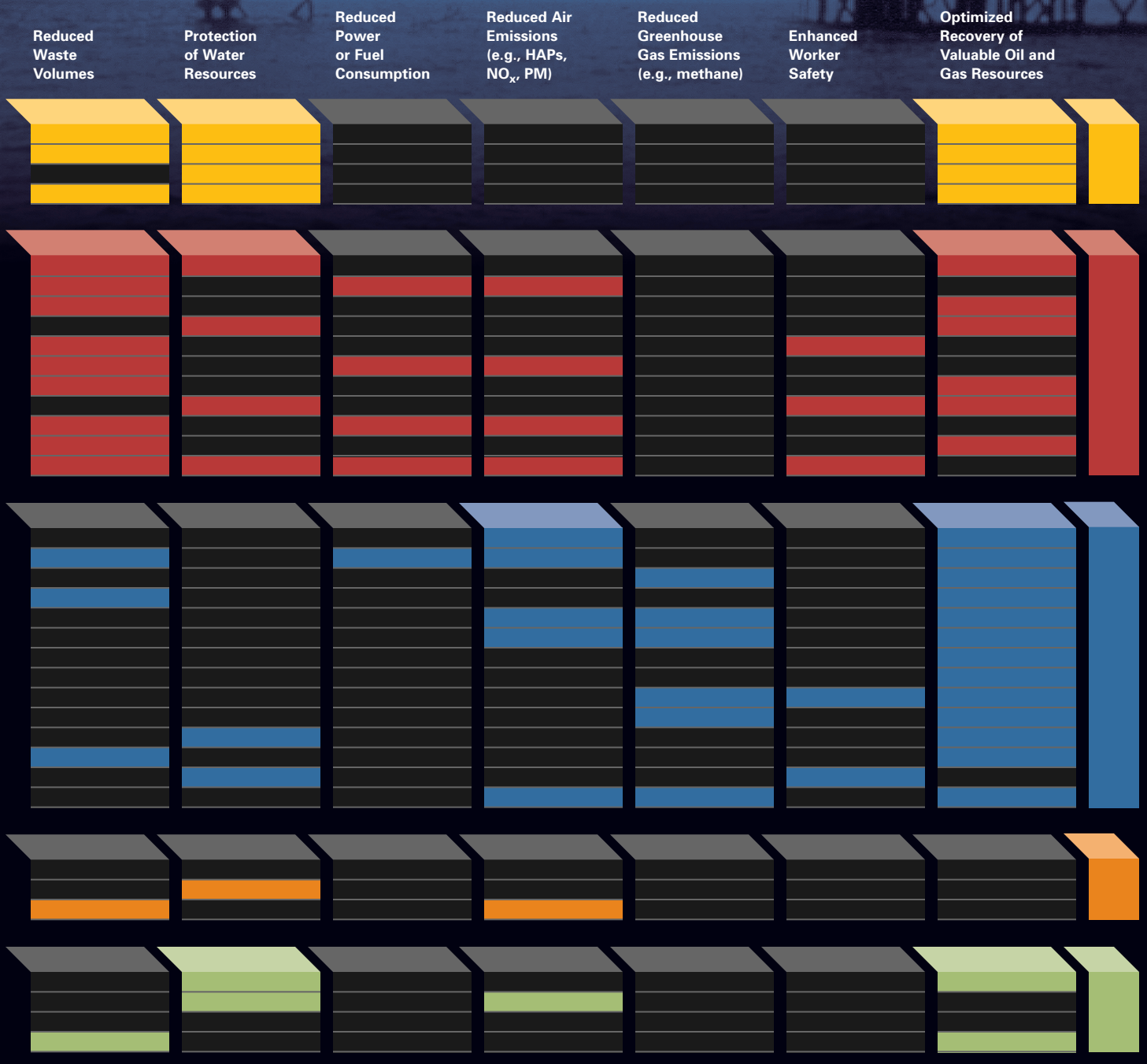


Environmental Benefits of Advanced Oil and Gas Exploration and Production Technology

Technology


Fewer Wells or Dry Holes
Smaller Footprint
Protection of Habitats, Wildlife, and Cultural Resources
Better Wellbore Control
Exploration
① 3-D Seismic
② 4-D Visualization
③ Remote Sensing
④ Subsalt Imaging
Drilling and Completion
⑤ CO_2-Sand Fracturing
⑥ Coiled Tubing
⑦ Horizontal Drilling
⑧ Hydraulic Fracturing
⑨ Measurement-While-Drilling
⑩ Modern Drilling Bits
⑪ Multilateral Drilling
⑫ Offshore Drilling
⑬ Pneumatic Drilling
⑭ Slimhole Drilling
⑮ Synthetic Drilling Muds
Production
⑯ Acid Gas Removal and Recovery
⑰ Artificial Lift Optimization
⑱ Coalbed Methane Recovery
⑲ Freeze-Thaw/Evaporation
⑳ Gas-to-Liquids Conversion
㉑ Glycol Dehydration
㉒ Advanced Data Management
㉓ Improved Recovery Processes
㉔ Leak Detection and Measurement Systems
㉕ Low-Bleed Pneumatic Devices
㉖ Offshore Platforms
㉗ Downhole Oil/Water Separation
㉘ Safety & Environmental Management Programs
㉙ Vapor Recovery Units
Site Restoration
㉚ Advanced Approaches to Site Restoration
㉛ Rigs to Reefs
㉜ Road Mix and Roadspreading
Sensitive Environments
㉝ DOE-BLM Partnership
㉞ Coastal and Nearshore Operations
㉟ Insulated Ice Pads
㊱ North Slope Operations

Fact Sheets



The technologies described in these Fact Sheets are merely representative of the numerous advances in exploration and production technology over the last three decades and, as such, are not intended as an exhaustive inventory of these advances.

Technology Fact Sheets

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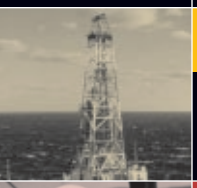


Exploration

Fact Sheets ① to ④

Drilling and Completion

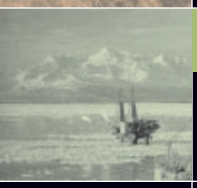
Fact Sheets ⑤ to ⑮

Production

Fact Sheets ⑯ to ㉙

Site Restoration

Fact Sheets ㉚ to ㉜



Sensitive Environments

Fact Sheets ㉝ to ㊱