

A little slice of Unocal history

At the end of the 1990's, Unocal was seeking exploration and development opportunities around the world, including southeast Asia. Dr. Baldeo Singh was working in Sugar Land, Texas supporting both drilling and business development activities.

He put together the following slide presentation, "**Drilling Excellence, A Century of Tradition,**" giving the very big picture of Union Oil's history in international drilling operations, and the great capabilities of Unocal's drilling organization in both exploration and development. It includes highlights of operations in Bangladesh.

Unocal did have continued success in Bangladesh, and Chevron is still operating there at the start of 2020.

Drilling Excellence

A Century Of Tradition

Baldeo Singh
Drilling Technology
Worldwide Support

UNOCAL WORLDWIDE EXPERIENCE

- Established in 1890, 108 year history
Exploration experience, 32 countries
- 13 Drilling Organizations in 8 countries
- Gulf of Mexico Alaska North Sea
Gulf of Thailand Indonesia
- Next major focus areas: Bangladesh and Brazil



ALASKA

CANADA

U.S.A.

GREENLAND

PACIFIC OCEAN

ATLANTIC OCEAN

CENTRAL AMERICA

SOUTH AMERICA

EUROPE

AFRICA

MIDDLE EAST

INDIA

CENTRAL ASIA

CHINA

RUSSIA

SOUTHEAST ASIA

INDONESIA

AUSTRALIA

PACIFIC OCEAN

INDIAN OCEAN

1910's - Gulf Coast, California, Alaska, Permian Basin, Wyoming, Alberta and British Columbia



1920's - Columbia , Venezuela



1930's - Operations continued in North, South and Central America.



1940's - Paraguay



1950's - Costa Rica, Panama, Peru, Gautemala, Cuba, Venezuela, Argentina, Australia



1960's - Spanish Sahara, Trinidad, Spain, Burma, Indonesia, Thailand, Philippines, Ras Al Khaima, Iran, Dahomey, Venezuela, Honduras, Nicaragua, Algeria, Libya, Italy, Dhofar, Trucial Coast, North Yemen, Qatar, Bahrain, Australia, Papua, Peru, Nigeria, Argentina, Netherlands, Ecuador.



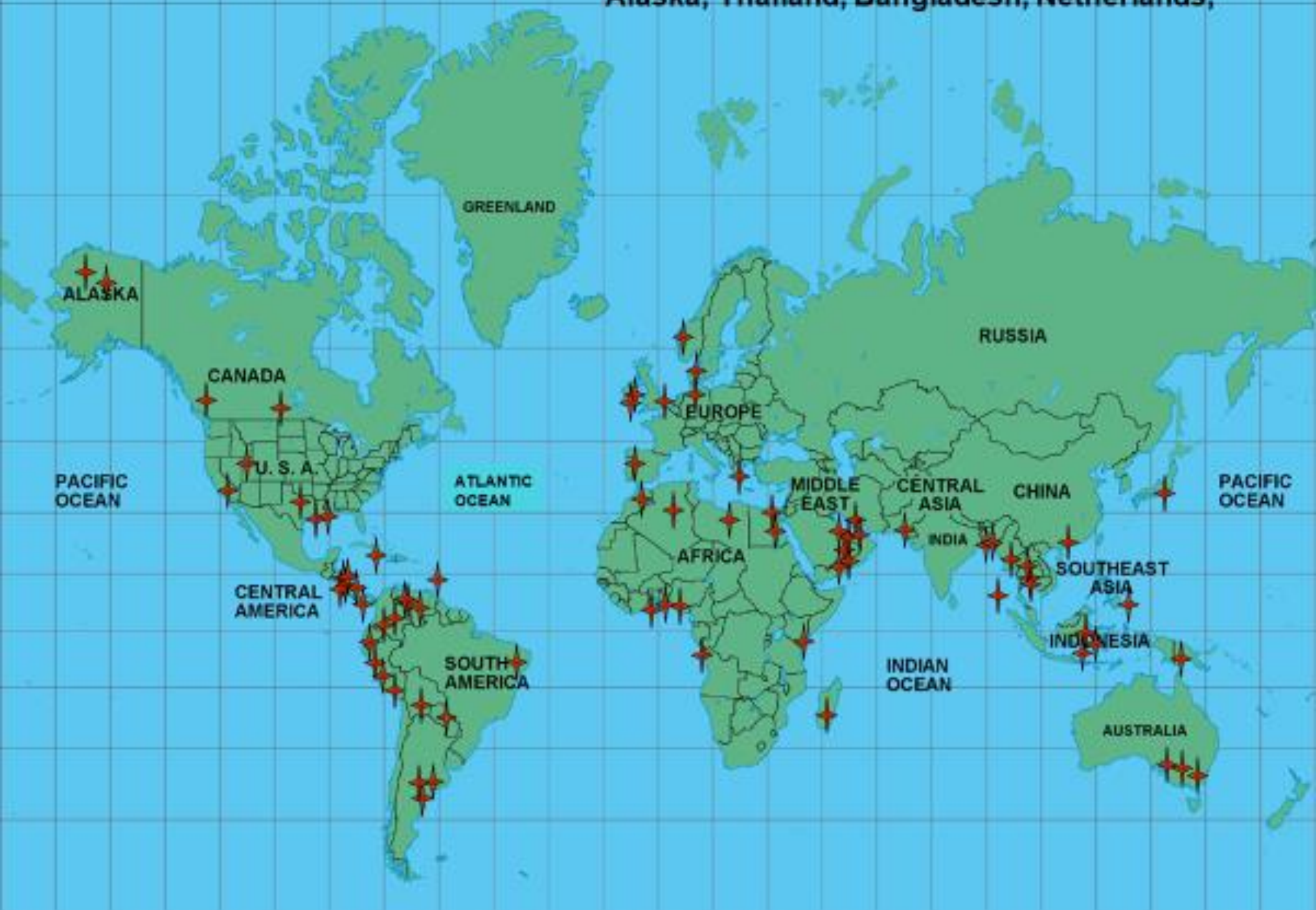
1970's - Peru, U.K., Bolivia, Thailand, Egypt, Pakistan, Bangladesh, Japan, Ireland, Norway, Australia, Brazil, Kenya.



1980's - Egypt, Argentina, Indonesia, Ireland, Columbia, Madagascar, Zaire, Togo, China.



1990's - Gulf Coast, Indonesia, Andaman Islands, Alaska, Thailand, Bangladesh, Netherlands,

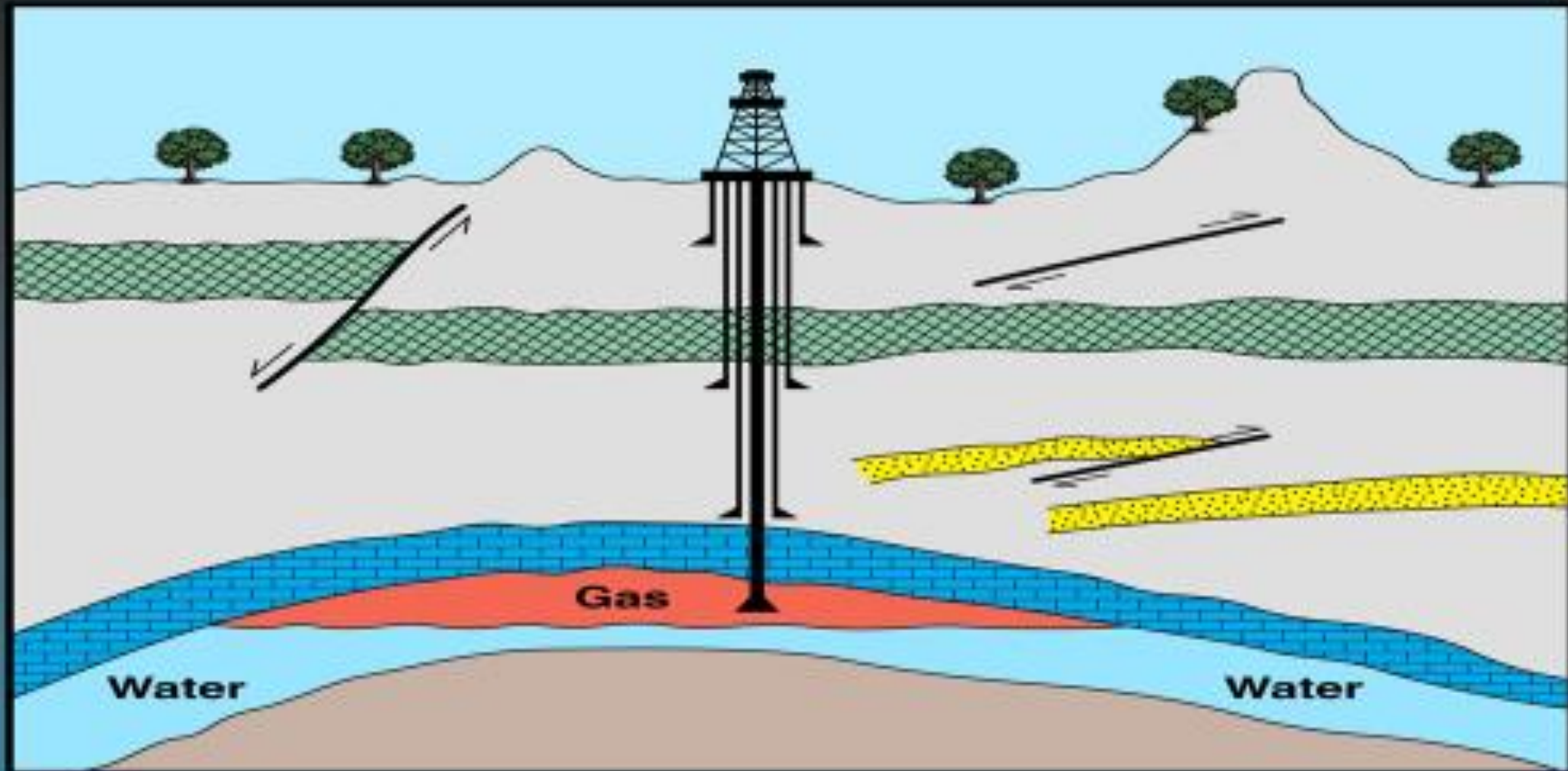




WHY DRILLING EXCELLENCE IS SO IMPORTANT ?

- Role of drilling in oil & gas exploration & development:
 - Finding Cost
 - Drilling & Completion Cost
 - Facility Development Cost
- 50% or more of the total cost is in drilling & completions
- Even smaller fields become economical

DRILLING SCHEMATIC

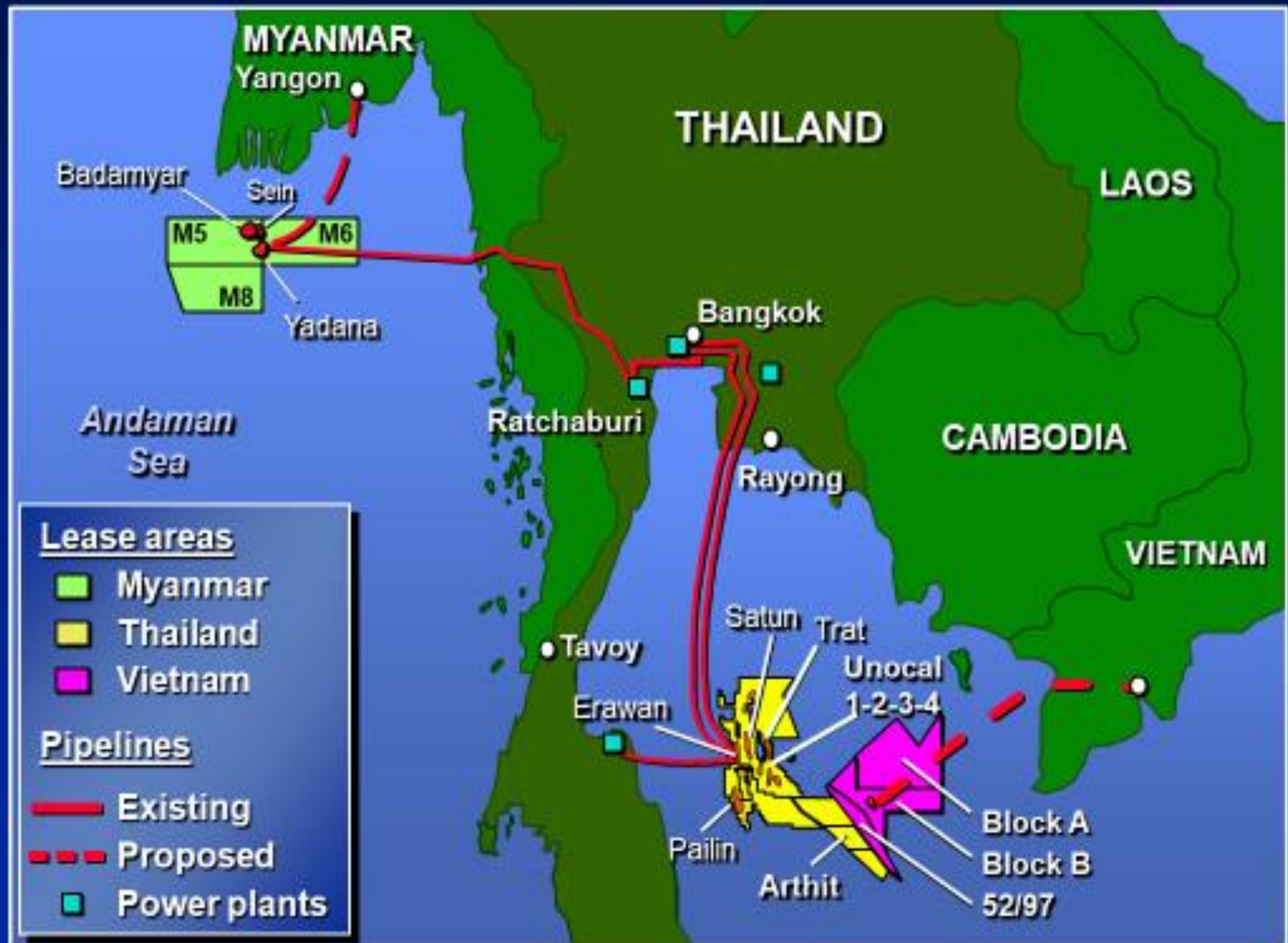


- **Faults, Thrust**
- **Over Pressure**
- **Sensitive Clays**
- **Hole Stability**
- **Stuck Pipe**
- **Loss Circulation**

CASE HISTORIES OF MAIN AREAS

- Thailand, 25+ Years of History of Operation through ups & down.
- Indonesia, 30+ Years of History of Operation.
- Deepwater Frontier Exploration

Thailand - Myanmar - Vietnam Making a Strong Position Stronger



Thailand

Three decades of successful energy development

~ 1 BCF/D gross production (1999 est.) from 12 producing fields in the Gulf of Thailand (Unocal 65%)

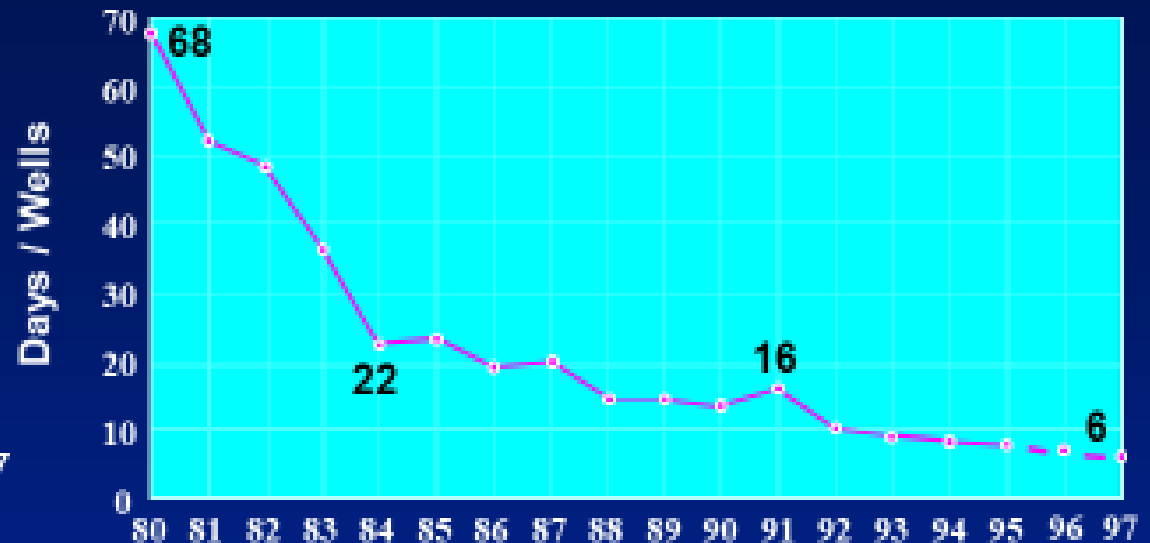
- Unocal production supports:
 - ~ 1/3 of Thailand's electricity generation and
 - ~ 1/4 of total energy supply
- Extensive infrastructure in place
- Innovative, low-cost drilling & development techniques successfully employed

Drilling Costs - Gulf of Thailand

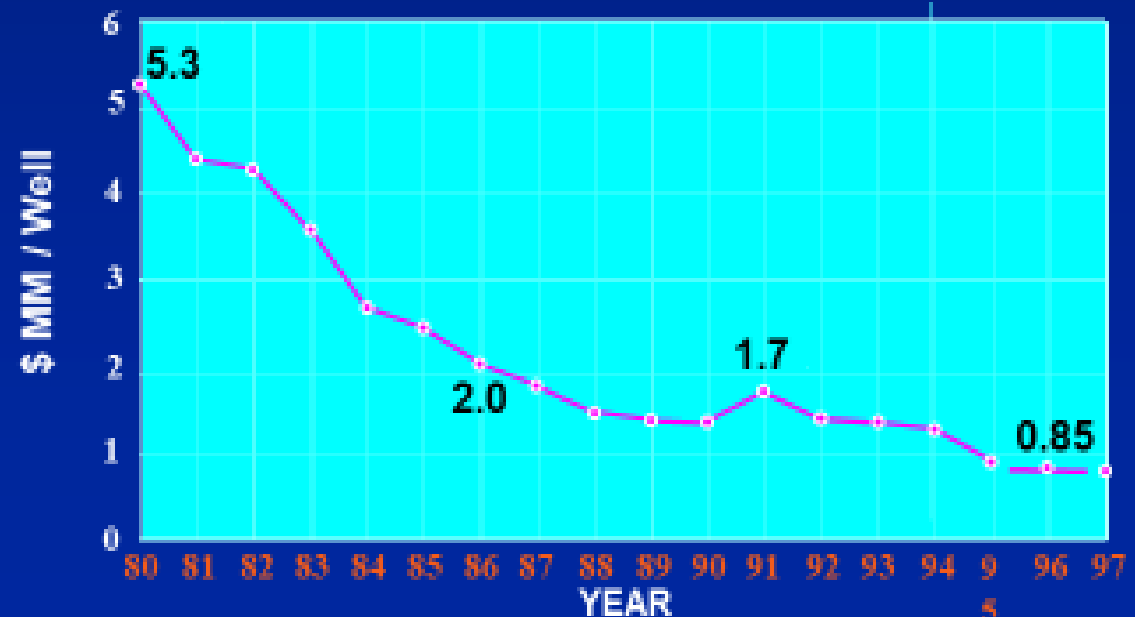
Drilling Technology

PDC Bits	1982
Oil Based Mud	1982
Simpler Completions	1983
Unitized Wellheads	1984-87
MWD Tool	1985
Top Drive Rotary Systems	1985
Steerable Drilling Systems	1985
Super Combo Logs	1985
Steering Tools	1988
Adjustable Stabilizers	1991
TCP Completions	1993
Slim Hole	1995

Development Wells
Average Drill and Complete Time



Development Wells
Average Drill and Complete Cost



MANPOWER COMPOSITION

The Thailand & Indonesia Experience

- Over 90% of the employees are from the host country.
- Training & career development within Unocal.
- Collaboration with local Universities.

- Opportunities of collaboration on bigger projects.
- A time tested good mix to adapt and innovate new technology.

Unocal's Experience in Deepwater Drilling Made in Indonesia

- SX Technology for Deepwater
- Reduced drilling cost from
\$ 5.2 MM to \$1.5 MM
- Indonesia - Brazil - Thailand
- Bay of Bengal (Future!)
- Gulf of Mexico, USA

Discoverer Spirit

Construction Cost \$370 Million U.S.
Water Depth Rating 10,000 Feet
Drilling Depth Rating 35,000 Feet
Variable Load Capacity 20,000 Metric Tons
Quarters Capacity 200 Personnel
Full Dual Derrick Capability

Wind Rating 80 Knots
Wave Rating 40 Feet
Dynamically Positioned (No Mooring)
Length 835 Feet
Beam 125 Feet
52,000 Total Horsepower

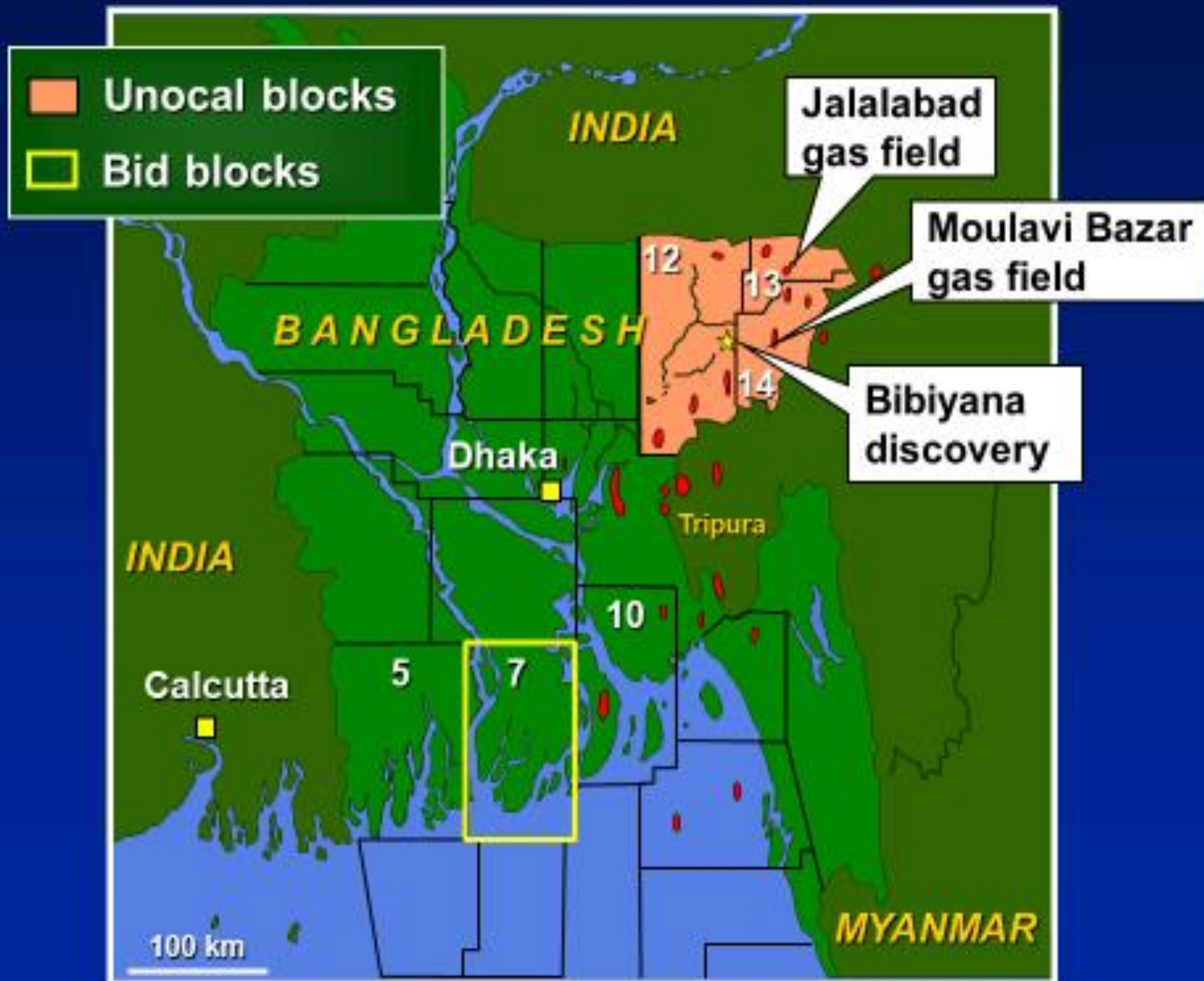


What is the Key to Unocal's Drilling Excellence

- **Maintain a supportive *culture***
 - Encourage and reward innovation, open communication, effective teamwork and fast decision-making
- **Instill the right *philosophy***
 - Geoscientists, engineers, drillers, financial staff and contractors work as a team and share commitment to succeed
- **Employ innovative, state-of-the-art *technology***
 - Includes advanced 3D interpretation, improved well design, slim holes, fewer hole sections, pre-moored anchors, BOPs on rig floor, synthetic muds, LWD evaluation
- **Provide the right *incentives***
 - Compensation of teams is directly linked to meeting the goals
- **Health, Safety & Environment *preservation***

Bangladesh

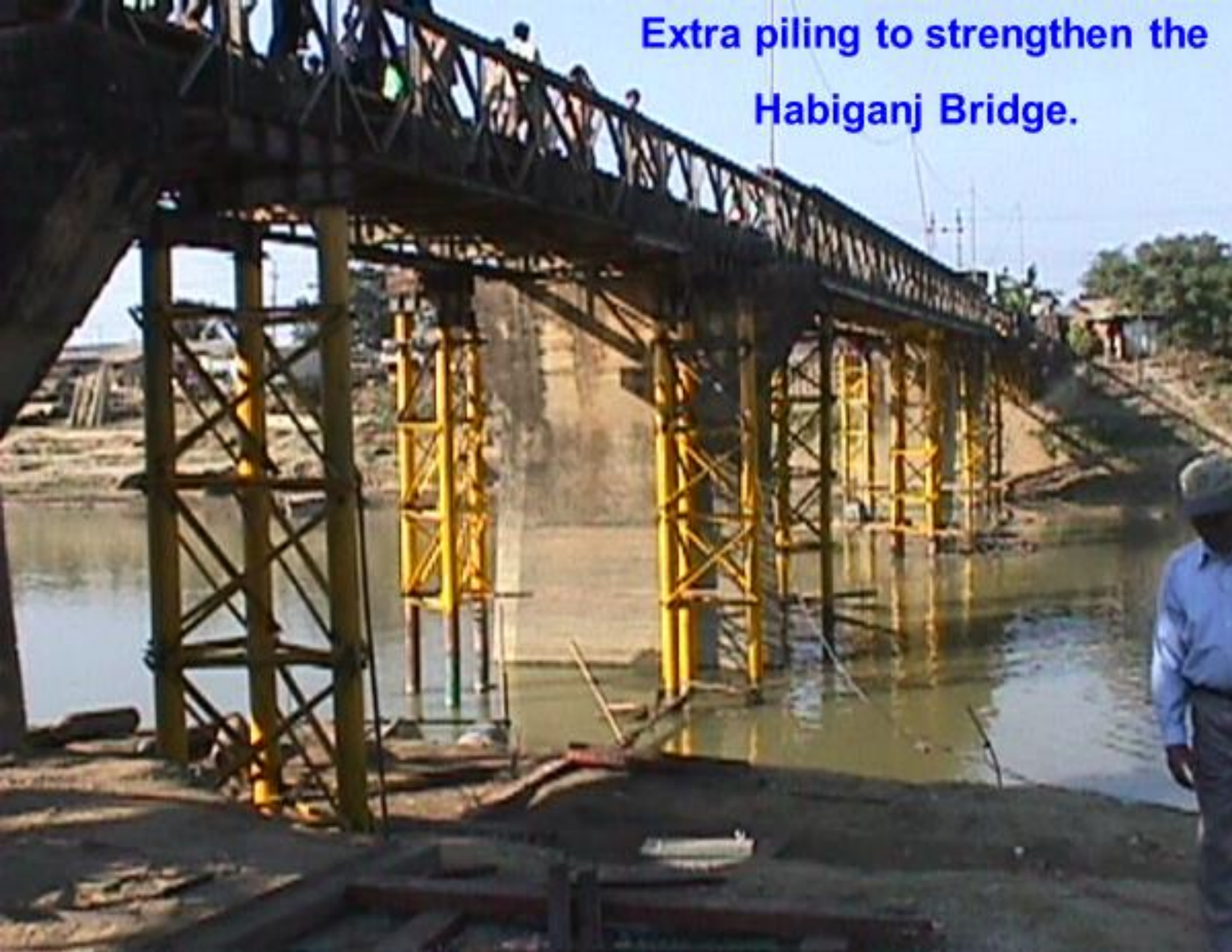
World Class Gas Resources

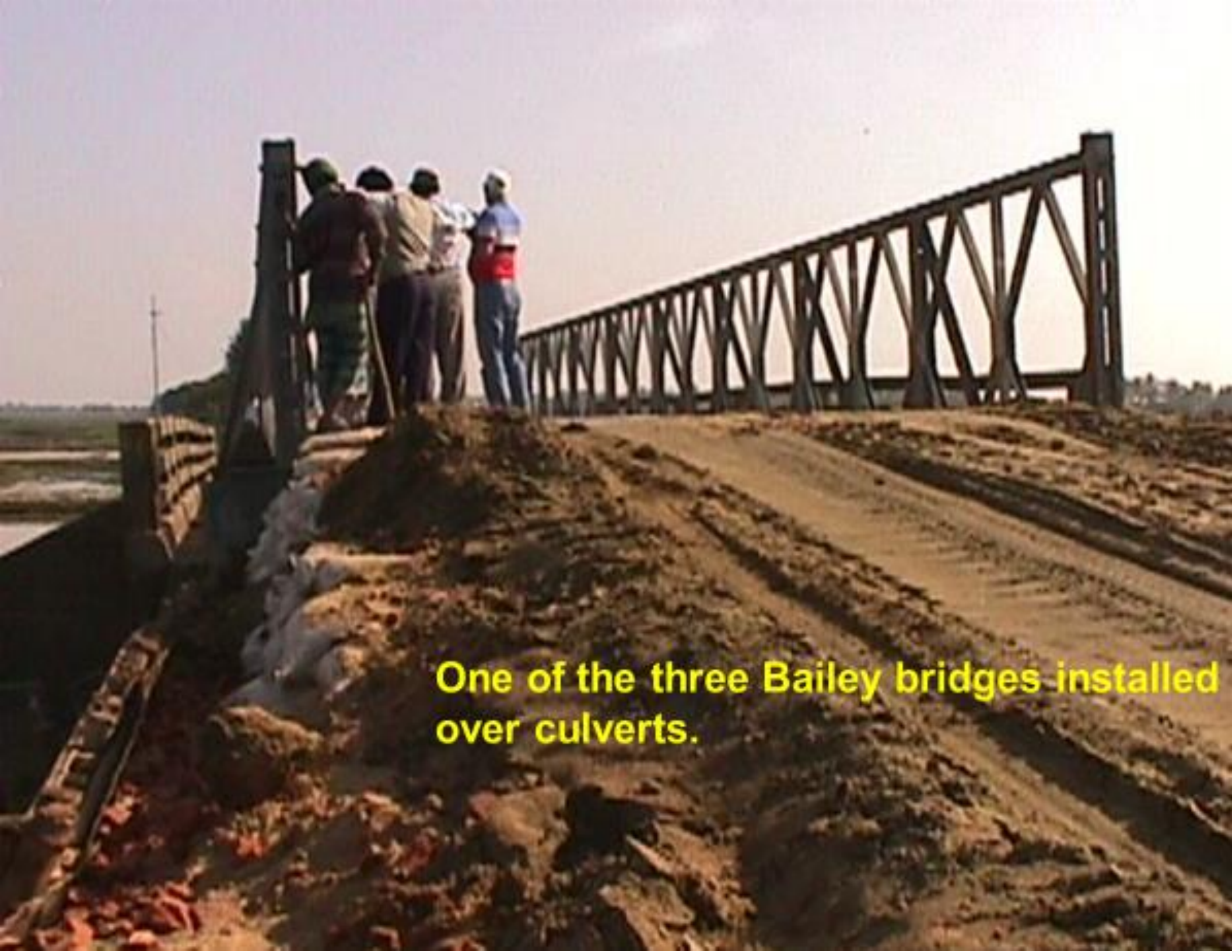


UNOCAL IN BANGLADESH

- Leverage technology from successes in Thailand and Indonesia.
- DRILLED 6 WELLS IN 1998 - 2000
- BIBIYANA DISCOVERY
MOULAVI BAZAR DISCOVERY

**Extra piling to strengthen the
Habiganj Bridge.**

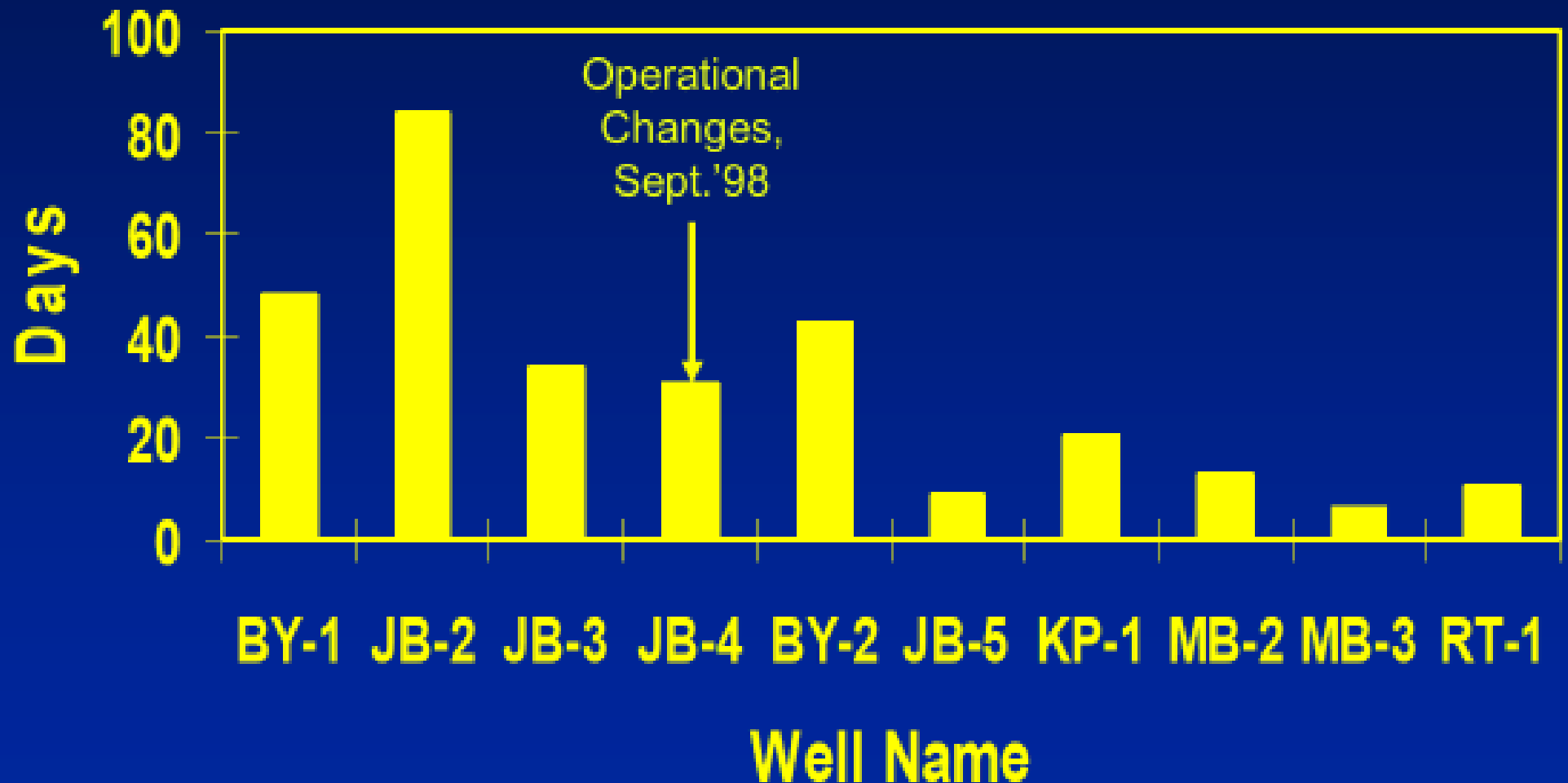




One of the three Bailey bridges installed over culverts.



Drilling Days to the Top of the BB-75



Unocal Bangladesh Achievements

- Fastest directional well in Bangladesh (MB # 3)
- Fastest well ever drilled in Bangladesh (Ratna # 1)
- Cheapest well ever to be drilled in Bangladesh (MB # 3)
- Goal is to be the most efficient operator in Bangladesh



SUMMARY & CONCLUSIONS

- Proven record of 30+ years in providing expertise to assist Countries in enhancing resource development
- Most efficient drilling & production organizations in the oil industry, with focus on adaptation and continuous improvement of operations
- Expand country's resource base by efficient drilling (add marginal fields to inventory)
- Respect for Health, safety & environmental.