



# DEEPSTAR PROJECT

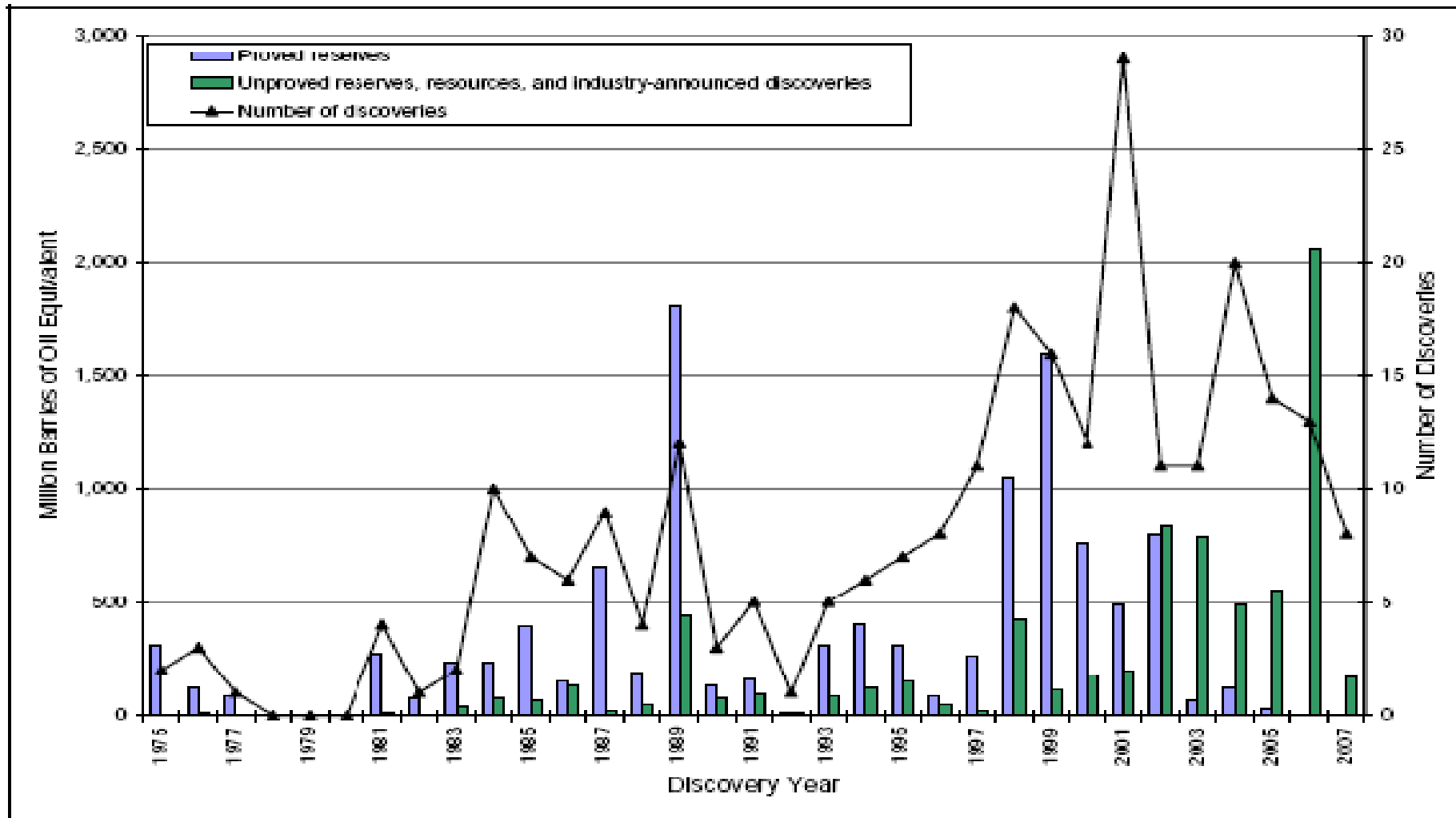
RPSEA Environmental Forum

November, 2008

DeepStar Confidential



# Where are the Proven Reserve Adds?





# DeepStar Historic Strategy



- ★ Leverage the financial and technical resources of the deepwater industry to:
  - Deliver technologies
  - Build deepwater technical competency
- ★ Technology development aligned with business needs.
- ★ Transfer and apply technology to deepwater assets.
- ★ Gain acceptance of deepwater technologies by industry and regulators.



# Phase IX Participants

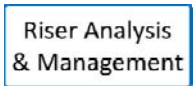
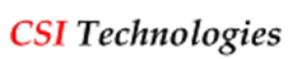




# DeepStar Contributors



AMOG  
Consulting





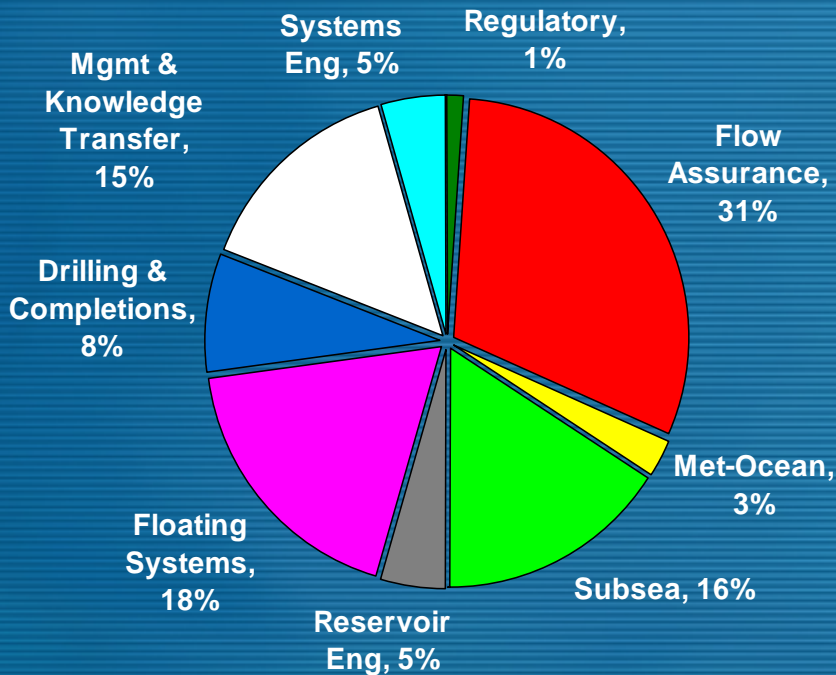


# DeepStar Phase IX

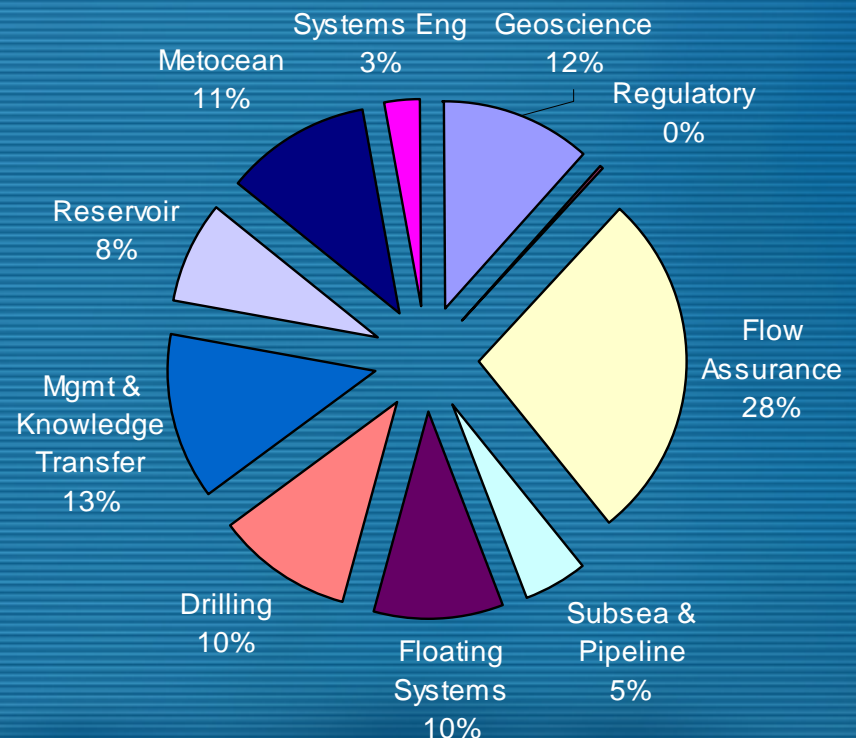


- ★ \$650,000 per member Company
- ★ Phase VIII ~\$5.8MM on 20+ projects
- ★ Phase IX ~ \$6.2 MM On 10+ projects

Phase VIII



Phase IX





# DeepStar “Themes”



- ★ DeepStar past successes include: GOM DWOP, synthetic mooring, hydrate prediction models, horizontal tree evaluation, spar & semi studies, developed GOM metocean criteria.
- ★ Most deepwater issues are not solved within a single phase using DeepStar resources.
- ★ Related multi-phase projects become “Themes” and extend over several DeepStar Phases.

- **Flow Assurance**
- **Vortex Induced Vibration**
- **Risers**
- **Spars**
- **Semis**
- **FPSOs**
- **Subsea**
- **Processing/Boosting**
- **Availability & Reliability**
- **XHPHT**

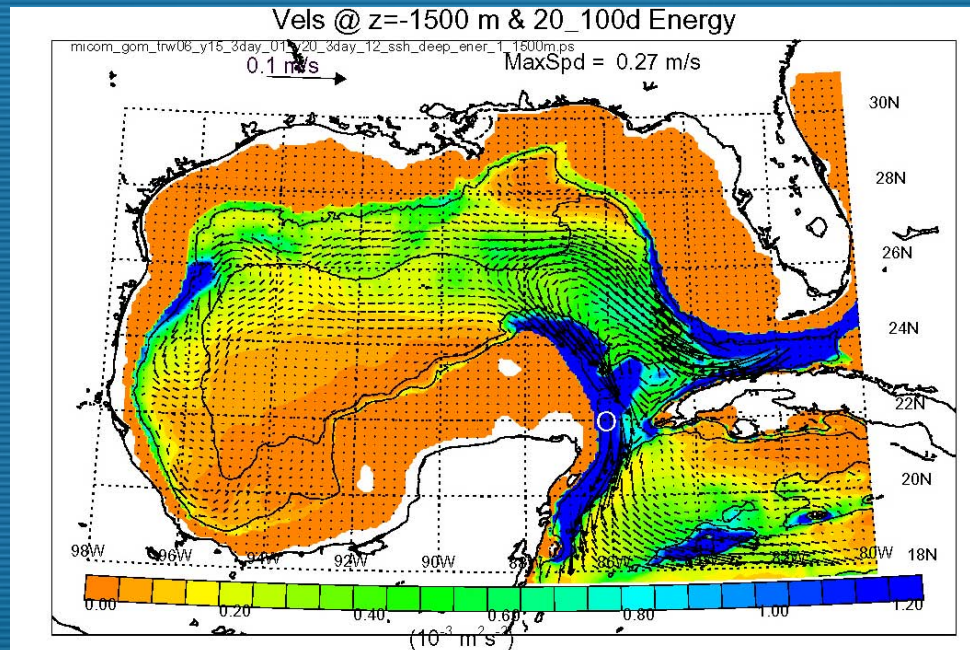


# MetOcean Committee



## ★ 9801 - Topographic Rossby Wave Modeling and Measurements

- DeepStar Budget: \$ 700k
- Champion: Cortis Cooper (CVX)
- Objectives: Topographic Rossby waves (TRWs) can generate currents of 2 kt over much of the water column along the Sigsbee Escarpment which runs through the Walker Ridge and Green Canyon regions of the GOM. This work will collect more field measurements and improve models for predicting TRWs.



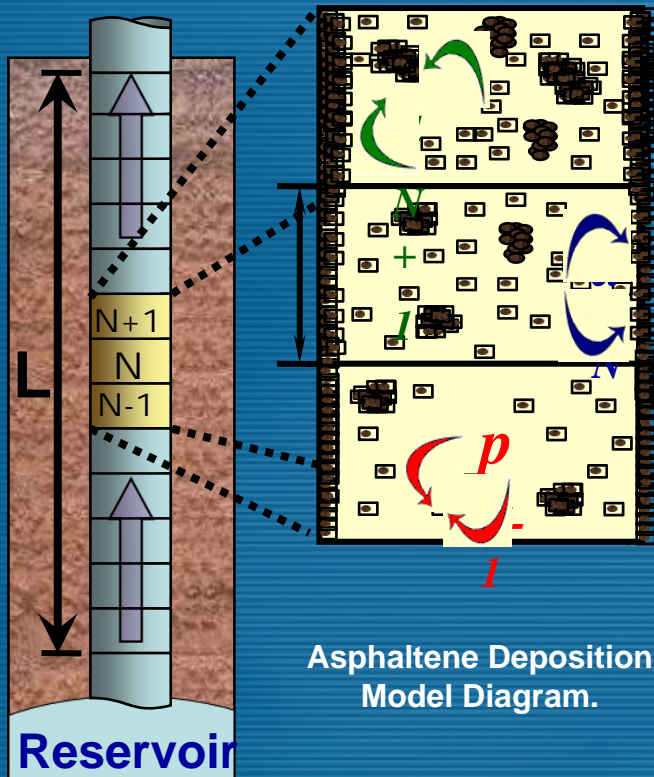


# Flow Assurance



## ★ 9201 - Asphaltene Deposition: Simulation Tool and Test Protocol

- DeepStar Budget: \$ 475k
- Champion: Jeff Creek - CVX
- Objective: Develop test methodology and simulation tools to forecast the occurrence and magnitude of asphaltene deposition. Mechanisms of deposit formation including kinetic effects, agglomeration, and deposit morphology will be modeled and tested.





# Questions?



## Thank-you

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# Floating Facilities



## ★ 9402 - Determine Remaining Life of Polyester Rope Moorings

- DeepStar Budget: \$175k
- Champion: Dave Petruska, BP
- Objective: Confirm a hypothesis (from MMS work) to determine that a polyester mooring system's life will safely exceed the project's design life. "20-hurricane" cycling test results are needed from other rope manufacturers besides the one used in the MMS tests. The hypothesis is based on a maximum strain theory, rather than the stress based theory used in API RP 2SM.



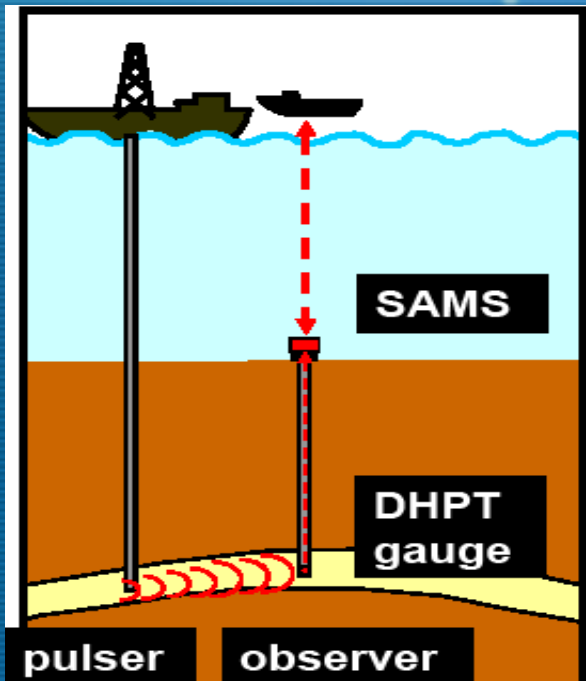
Rope Braiding Machine fabricating Mooring Line



# Reservoir Committee



## ★ 9701 - Remote Reservoir Pressure Monitoring in Abandoned Appraisal Wells - Phase 2



Subsea Acoustic Monitoring System

- DeepStar Budget: \$ 300k
- Champions:
  - ❖ David Kihneman – Anadarko
  - ❖ Gene Narahara – Chevron
- Objective: Phase 2 - Deployment: 1) bring leading technologies from Phase 1 to full commercial deployment in deepwater. 2) Close integration, installation and reliability issues such that technology is applied routinely. 3) Demonstrate the technology.



# DeepStar - Significant Contributions Since 1992



- ★ DeepStar is the sole deepwater technology development forum in US
- ★ Solely funded by industry
- ★ Provides a unique arena where technical staff/ experts/ ...from the US E&P Industry can meet all year-long (without requiring Confidentiality Agreement (or non-CA)!).
- ★ It is very efficient, delivers results, and has a very smooth line of decision and management.
- ★ Unlike other forums, it is structured by "disciplines" (ex: subsea facilities) vs "theme" (subsea boosting).
- ★ Unlike other DW forums, with or w/o gov't funding, it is a "think tank where DW technological gaps are identified, through conceptual/ feasibility studies": Identifies the needs for the industry.
- ★ Delivers SOR and/or analysis pointing to enhancing/ enabling technologies, to be developed outside DeepStar

