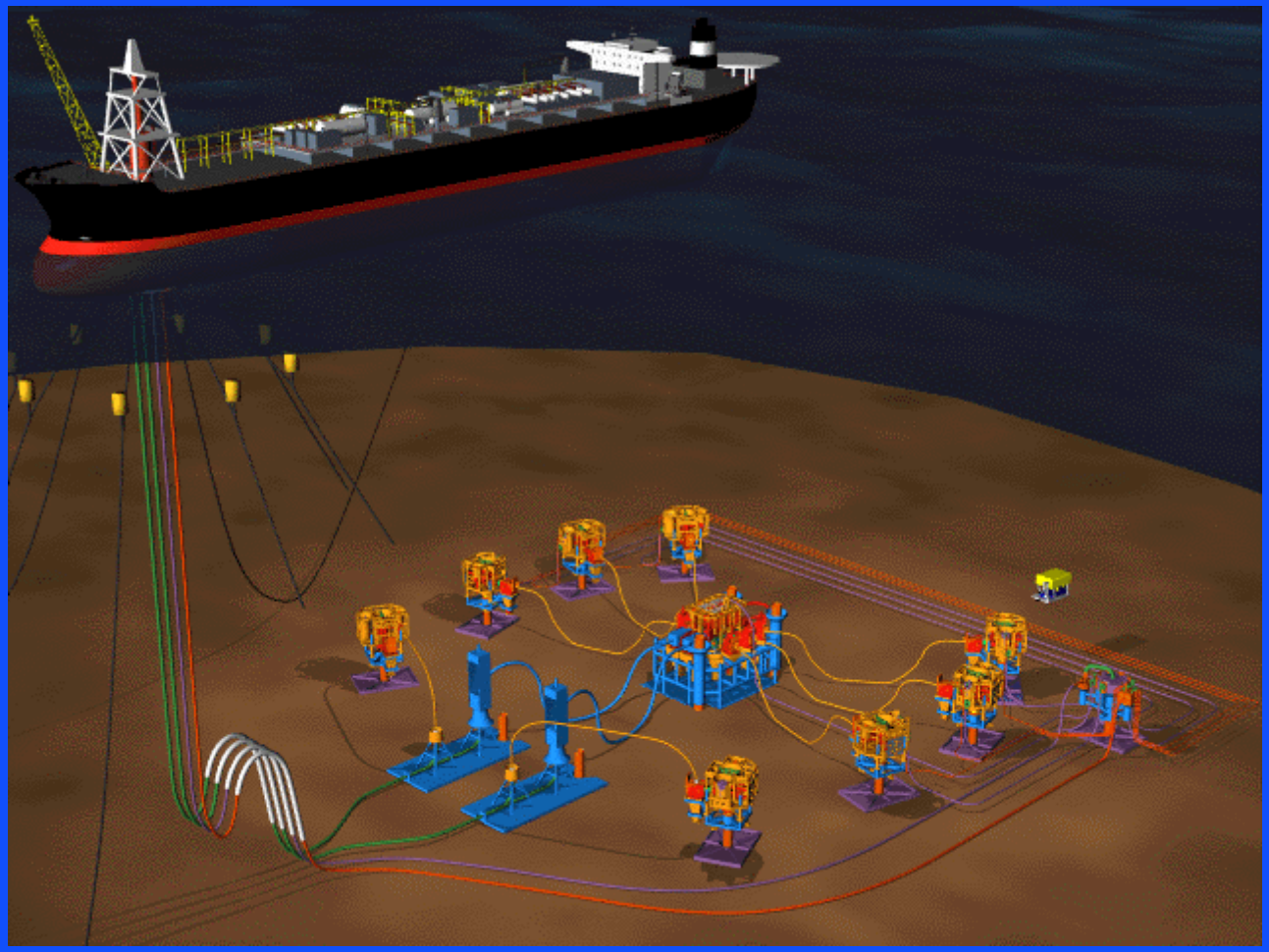
# *Turret Mooring of Production Vessels*

*Arun Duggal, Rick Hall & Peter Poranski*

*FMC SOFEC, Houston*

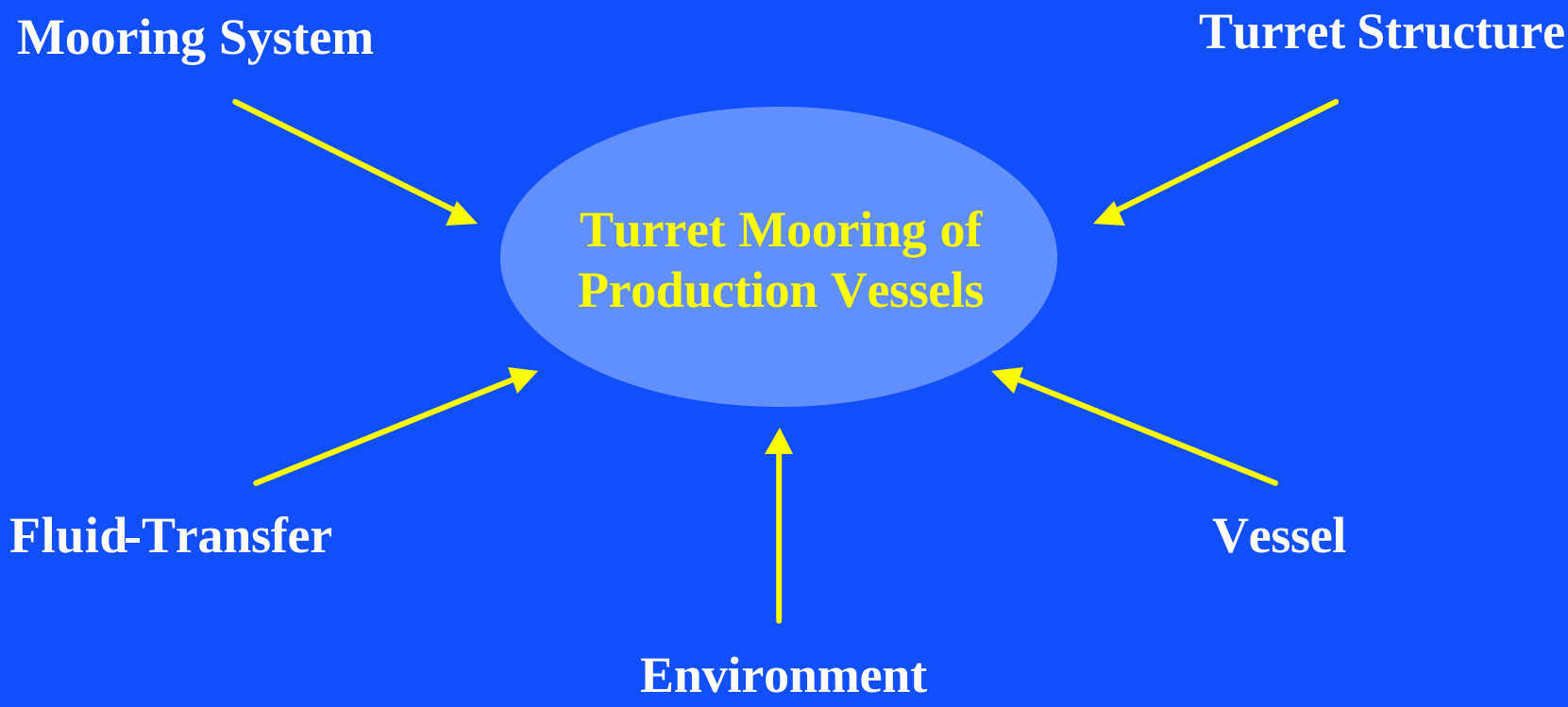
Energy Week Conference, Houston, 29 January 1997

# Conceptual FPSO Development

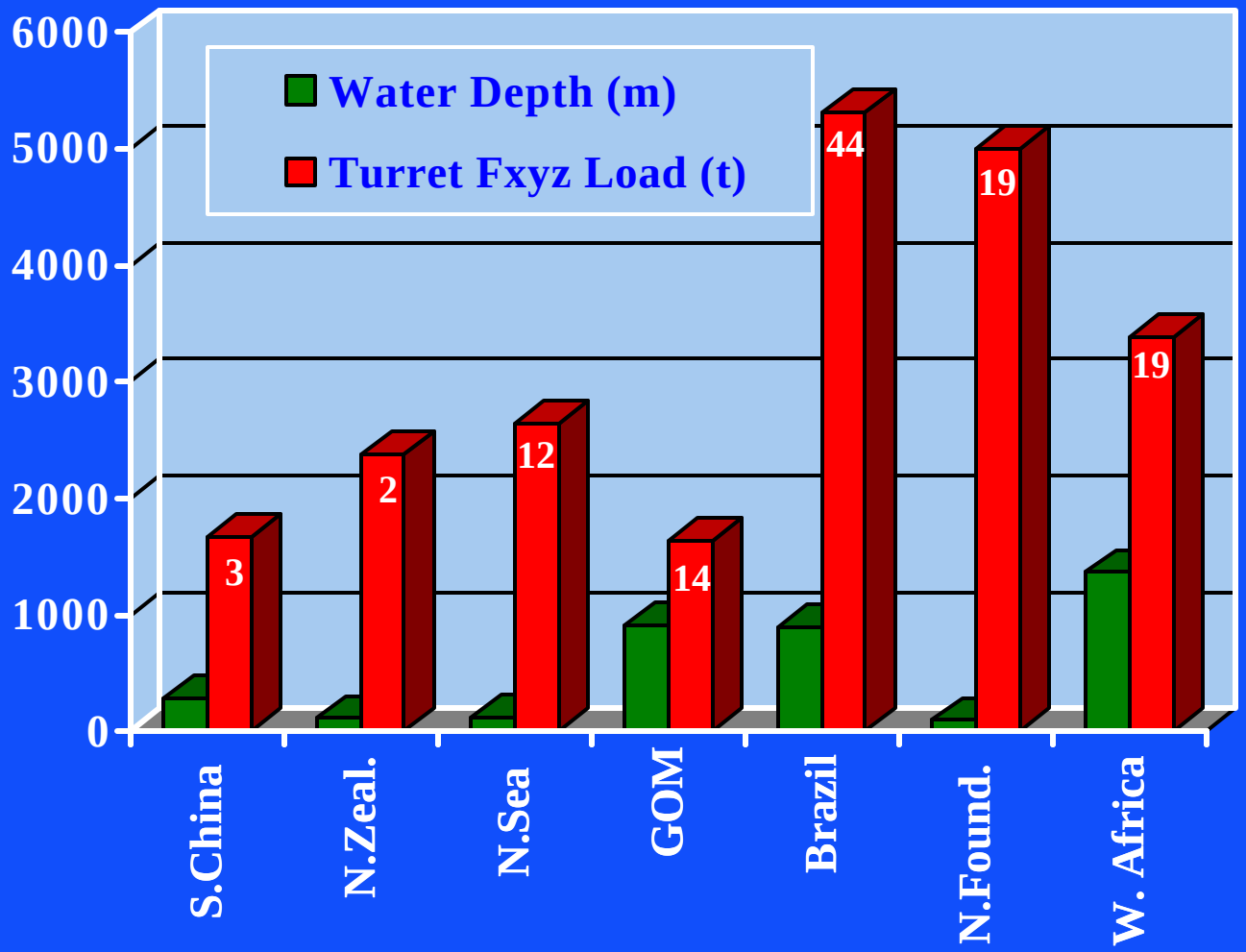


# Focus of Presentation

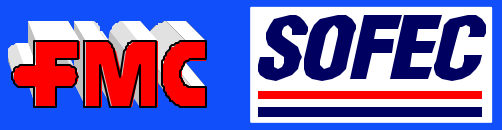
## *Optimum Turret Mooring Requires an Integrated Design Solution*



# Turret Mooring Loads



# Integrated Design:
# Turret Mooring Systems




**Mooring System**
- Anchor Legs
- Risers
- Anchors
- DP Assist

**Turret Structure**
- Size
- Location
- Loads

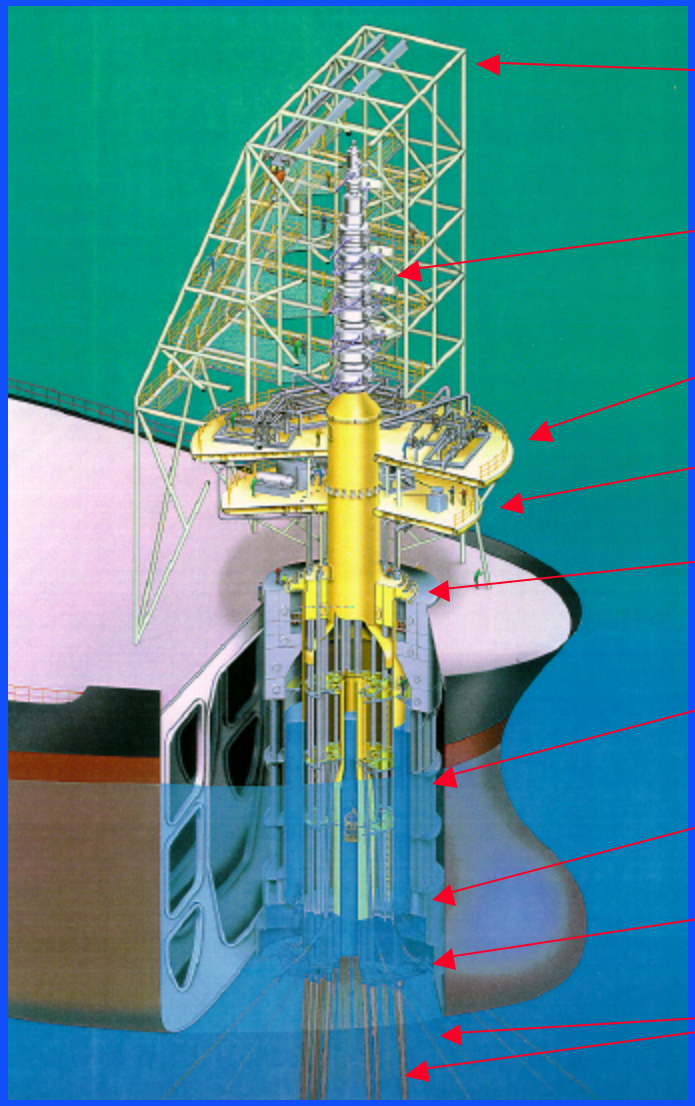
**Turret Mooring of Production Vessels**

**Fluid-Transfer**
- Well Heads
- Subsea Manifolding
- Risers
- Turret Manifolding
- Swivels
- Offloading

**Environment**
- Waves
- Wind
- Current
- Ice

**Vessel**
- Storage
- Topsides Layout
- Vessel Motions

# Turret Arrangement



Swivel Access Structure

Swivel Stack

Manifold Deck

Pull-in Deck

Upper Bearing

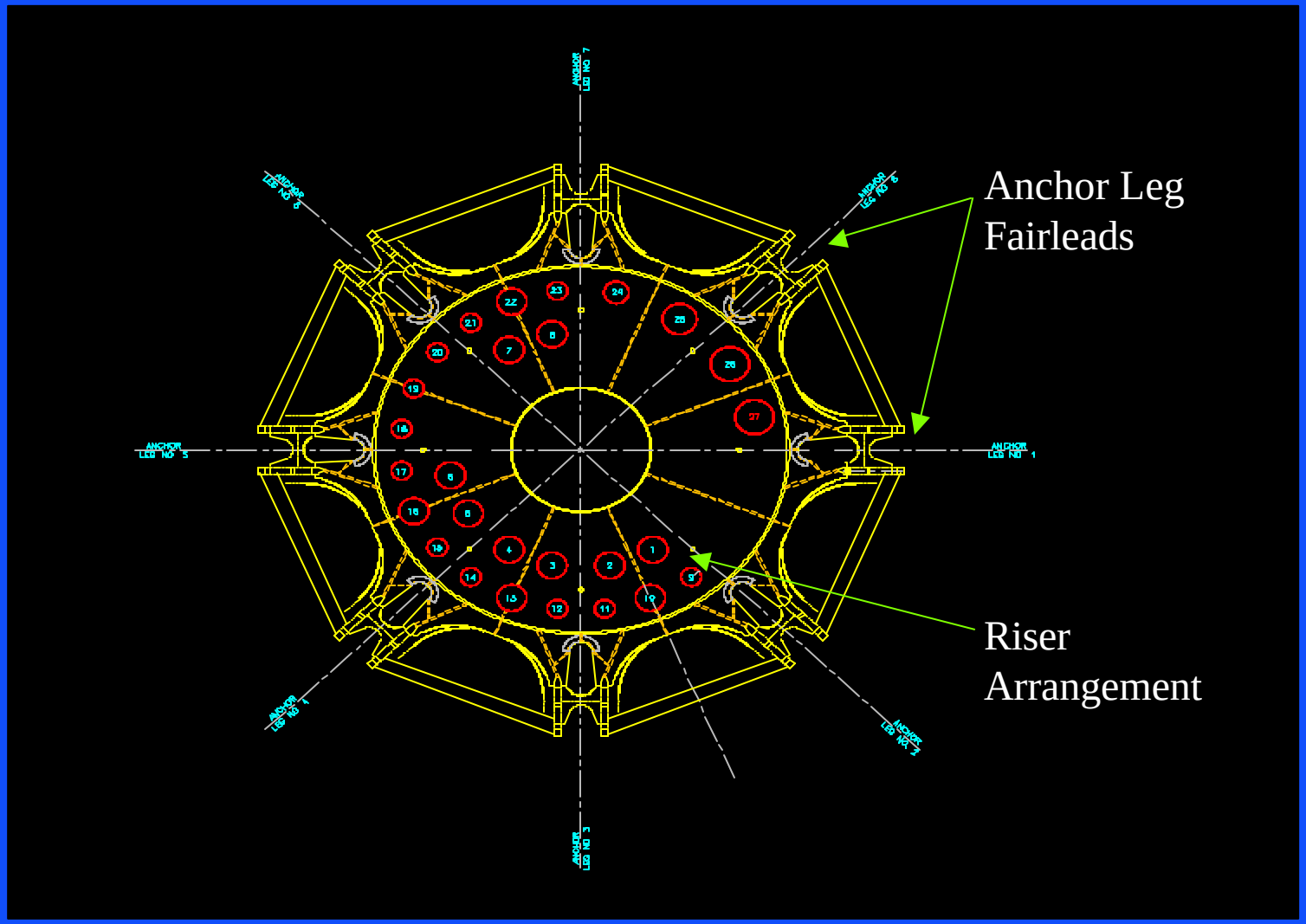
Turret Shaft

Lower Bearing

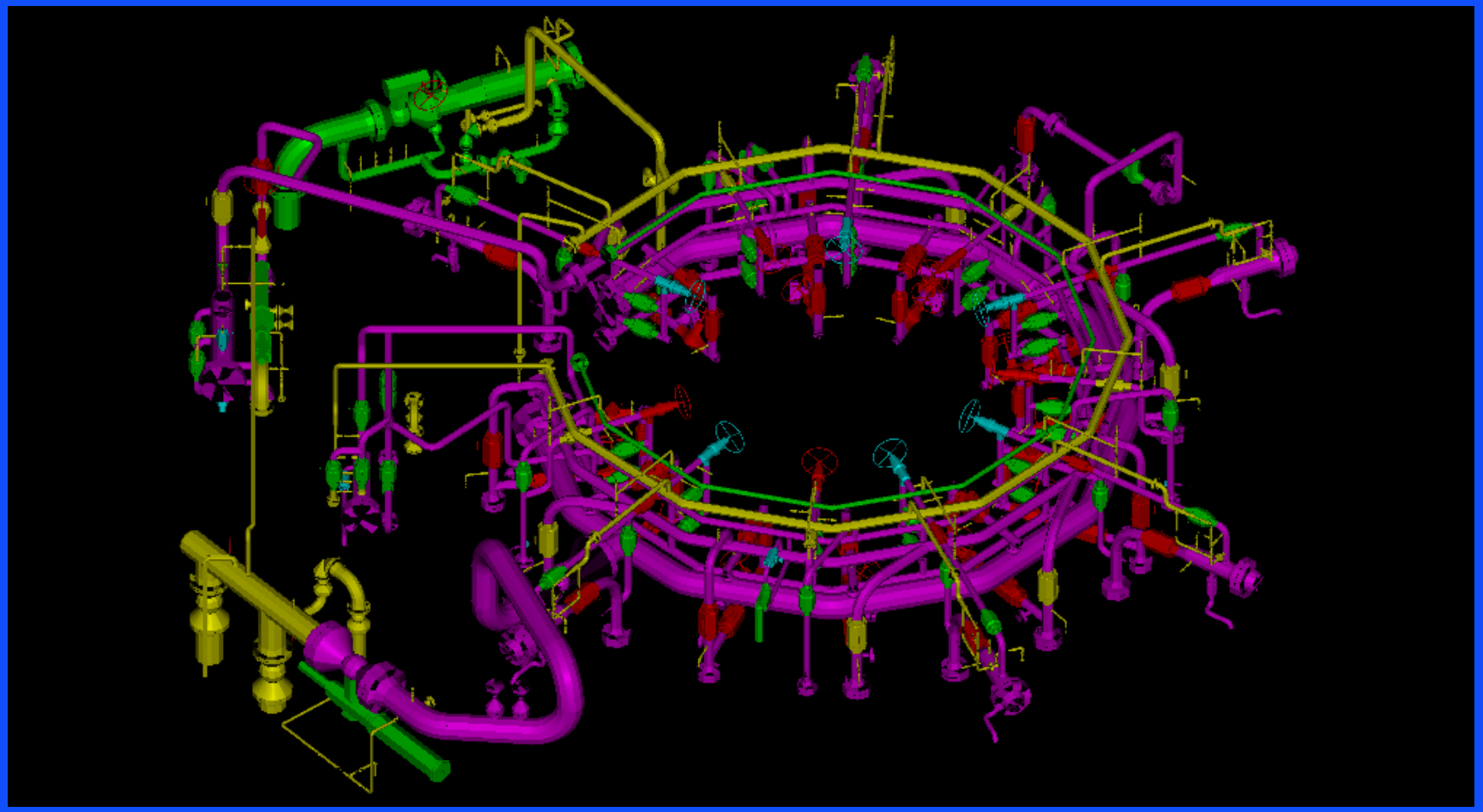
Chain Table

Anchor Legs & Risers

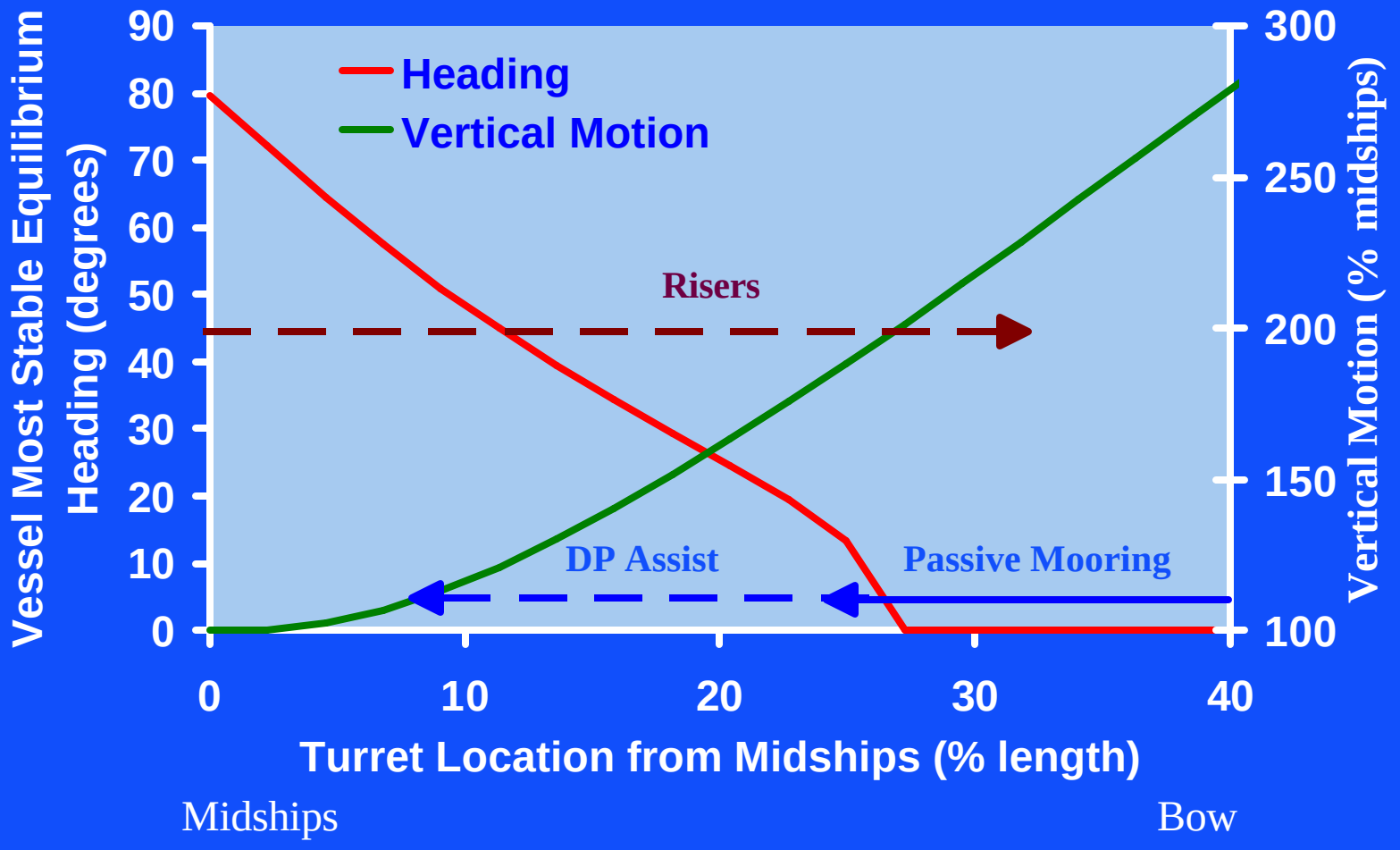
# Chain Table Arrangement



# Turret Manifold



# Influence of Turret Location



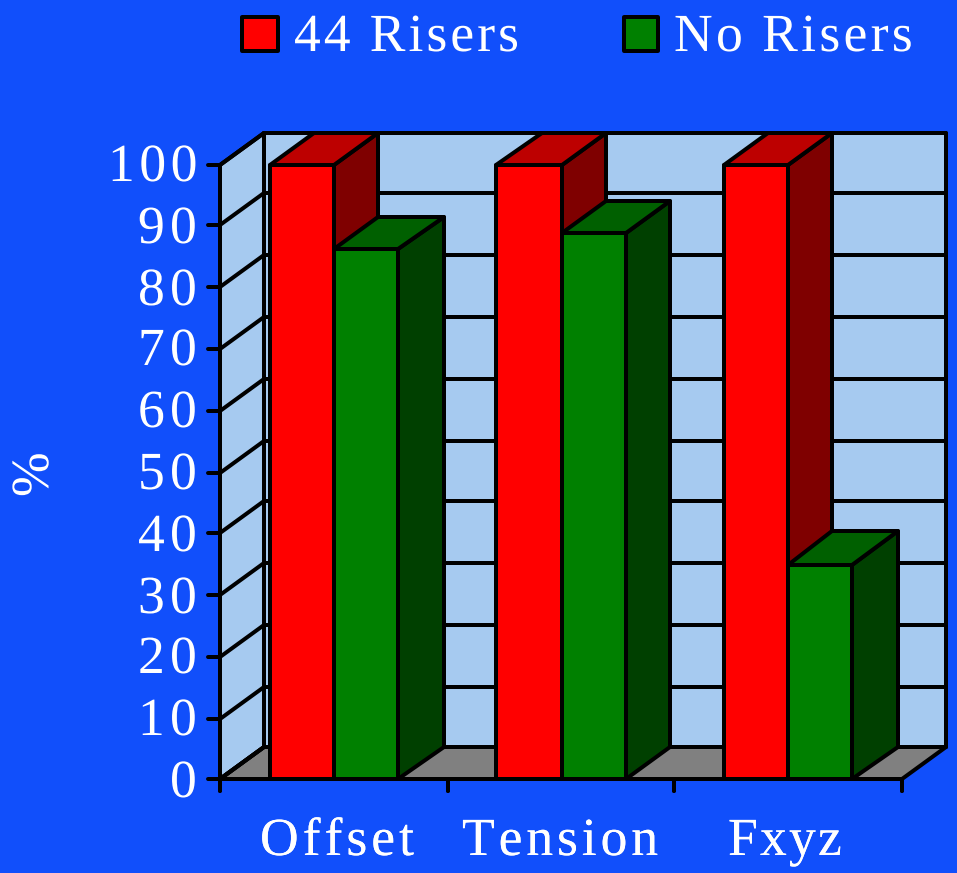
Title:
Creator:
CreationDate:

# Turret-Hull Interface

# Mooring System Components

# Integrated Anchor Leg & Riser Analysis

Water Depth = 900m (3000 feet)




- Mooring System Stiffness
- Current Loading
- Low Frequency Damping
- Riser-Anchor Leg Interference
- Turret Loads

# Comparison: Conventional & Polyester Anchor Legs

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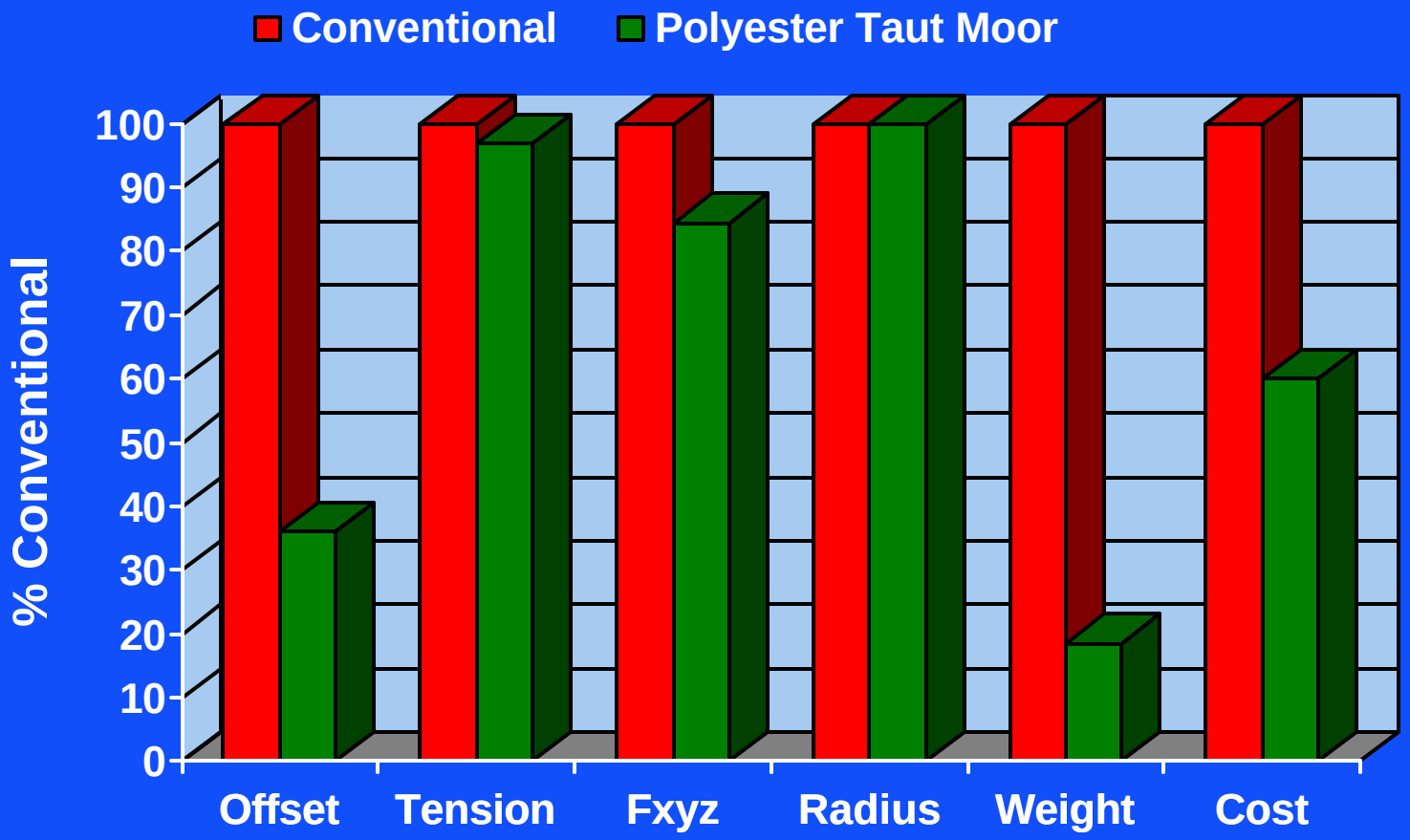

# Conclusions

- **Optimized Turret Mooring System Requires Integrated Design:**
  - **Vessel**
  - **Environment**
  - **Fluid-Transfer**
  - **Turret Structure**
  - **Mooring System**
- **Turret Mooring of Production Vessels Provides a Versatile and Cost Effective Solution to New Field Developments**