Chevron's experience in Methane Release Mitigation from Offshore Platforms

Walt Zenon & Phil Miller
Chevron-GOM

Offshore Technology Transfer Workshop
May 6, 2008
New Orleans, LA

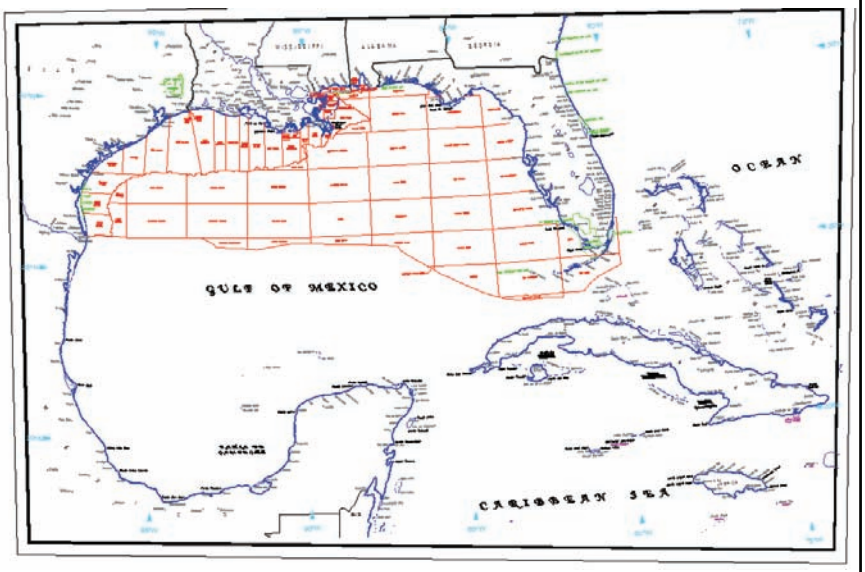
Chevron North America Exploration and Production Company

Business units:

- **Canada**
- **Deepwater**
- **Gulf of Mexico**
- **MidContinent / Alaska**
- **San Joaquin Valley**

W.J. (Walt) Zenon, PE
Energy Management Special Projects
May 6, 2008
EPA Natural Gas STAR
Offshore Technology Transfer Workshop

Gulf of Mexico BU



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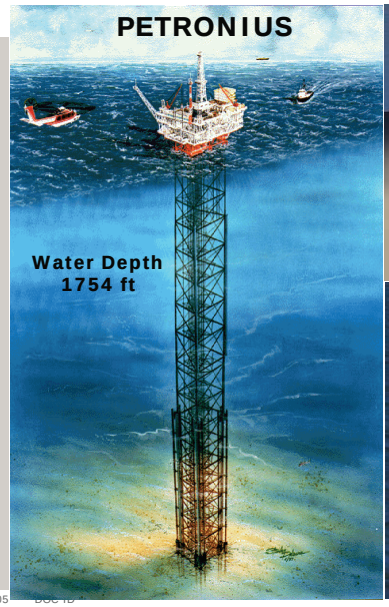
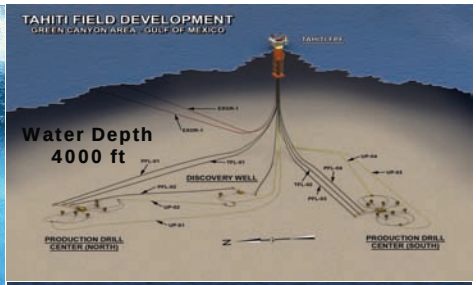
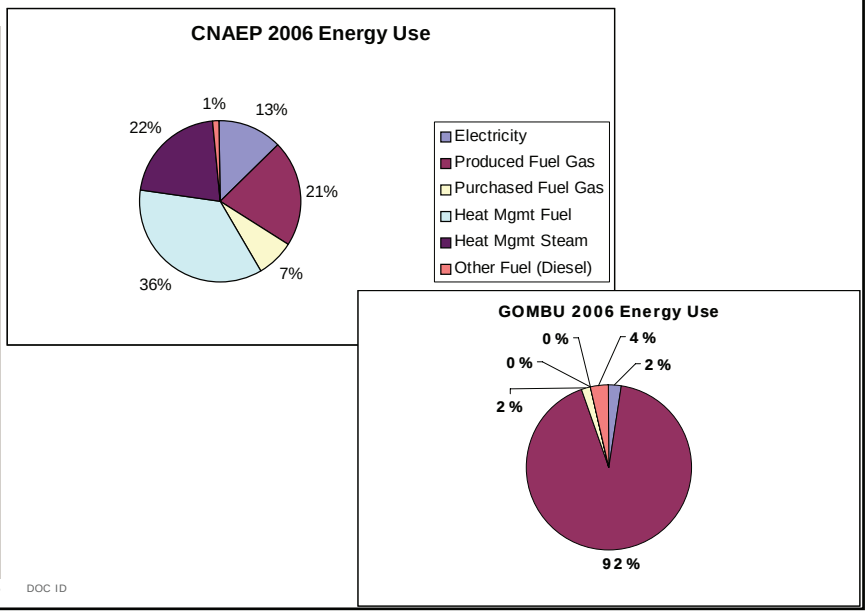
Gulf of Mexico BU





CNAEP Energy Management



CNAEP Energy Management Program

Improving Energy Efficiency in Operations

- Organization Capability and Communications
- Metrics, Goals and Performance Tracking
- Data Gathering, Surveillance, & Analysis
- Optimization Opportunity Identification
- Best Practices

Energy is defined as the consumption of purchased or produced gas, oil, electricity or steam and releases associated with vent, flare and control systems.

GOMBU Energy Management Develop EM Fluency

- **Development of the Flare and Vent EOP**
- Multiple examples of vessel **flash gas being used for fuel** (Treater, Glycol Condensate Separator, Stock Tanks)
- **Vent & Flare Compliance Team** in place
- GOM Employees have a **full understanding of the principals of EM, even with new hire employees**
- Reduced fuel and energy usage as a result of implementing projects identified by **SERT review** and Energy Management field reviews

GOM procured **two Gas Find IR cameras and two V-PAC instruments** to aid in Energy Management optimization efforts

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GOMBU Energy Management Successes

- South Timbalier 35 'E' - VFD Installation
  - Save $120K Cap → reduce Opex - $178k/yr
- Gemini Eductor
  - Add 4 BCF Reserves – NPV $4.4 MM
- Mound Point 114 - DC Air Compressor
  - Invest $25k → save $1.4 MM/yr
- Hatter's Pond
  - Invest $20 k → save $6.8 MM

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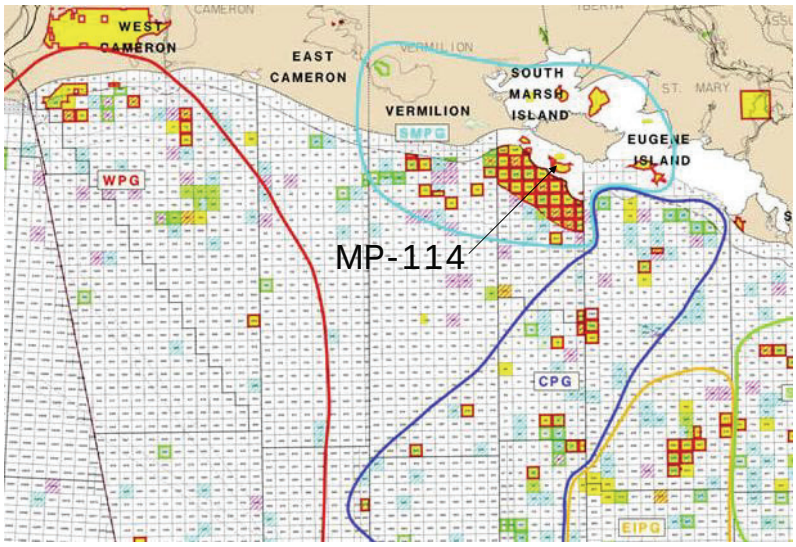
GOMBU, SMPG – MP #114 Compete Moment

Compressed Air vs Natural Gas,

as supply source for single well caissons

Phillip R. (Phil) Miller
Lead Principal Investigator
May 6, 2008
EPA Natural Gas STAR
Offshore Technology Transfer Workshop

Gulf of Mexico BU
MP-114 Caisson



MP 114 Compete Moment

- Mound Point #114 single well Caisson
- Natural gas supply skid w/Bazooka pulling supply off of flowline
- Increased sand & water production from well, causing many problems
- Fluids in supply system problems
- 81% downtime in 19-day period
- 26,604 OEG impact

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MP 114 Compete Moment

- Replace natural gas supply skid w/24 VDC solar powered air compressor package
- Overcoming resistance to change; Operations and Engineering.
- Operations installed new skid
- Total installed cost ~$25,000

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MP 114 Compete Moment

Natural Gas Supply Skid

24VDC Compressed Air Supply

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MP 114 Compete Moment

- **Before compressed air supply (19-day period)**
  - **Equipment repairs due to fluids**
    - **1-SSVs pump, 2-SCSSV pumps ($3,800)**
    - **4-Automated choke controllers ($10,000)**
  - **Field lift boat with N_2 supply**
    - **2-days ($4,000)**
  - **Miscellaneous wet supply gas problems**
    - **($3,000)**
  - **Downtime (deferred production - 2005 mkt. value)**
    - **26,604 boeg ($1.4 MM)**
  - **Instrumentation venting, panel, & other supply usage**
    - **Instrument bleed - 4.5 mcf/d (~$31.00/d)**
    - **Other usages – 1.0 mcf/d (~$7.00/d)**

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MP 114 Compete Moment

- **24VDC Compressed Air Supply (9 mos. before & after)**
  - Improve equipment reliability
    - Dry supply source
    - Reduce supply gas related downtime ~90%
    - 37 days/yr. @ 1,070 OEG/d ($2 MM/yr.)
  - Eliminate supply gas users (efficiency)
    - Regulators(4), controllers(2) & scrubber pump(1) - fugitive gas emissions
    - 5.5 mcfd ($14,000/yr.)
  - Eliminate spill exposure from instrumentation venting & tubing leaks
  - Caveat (non-continuous supply)
    - Battery life limited ~3 hrs/day run time
    - Essential to minimize leaks.

We have built 3 different designed packages

For 3 Different type facilities

MP 114 Compete Moment

- **Thanks to team members**
  - **Paul Naquin – Operator w/ Idea**
  - **Phillip R. Miller – PI, Designer**
  - **Gary Wilson – EE, Designer**
  - **Greg Boudreaux, Jimmy Wilson, & Robert Lebouef – SCADA Tech's**