## AV Tamar—The Opening of a Frontier Basin in the Eastern Mediterranean\*

#### Susan Cunningham<sup>1</sup>

Search and Discovery Article #110155 (2011)
Posted June 30, 2011

#### **General Comments**

Noble Energy has been operating in the eastern Mediterranean Sea since 1998. Noble has a 47% interest in the Mari-B field, Israel's the first offshore natural gas production facility.

Significant exploration discoveries are at Tamar, Dalit, and Leviathan. Noble has a 36% interest at Tamar, the largest deepwater gas discovery in 2009, with current estimate of 8.4 trillion cubic feet (Tcf) of natural gas. Leviathan represents the largest exploration success in Noble's history, with mean resources of 16 Tcf.

Supported by 3D seismic acquisitions in 2009 and 2010, Noble Energy has identified a number of additional prospects on its "acreage" positions in offshore Israel and Cyprus, with plans for 3-4 exploration/appraisal wells this year (2011). It operates approximately 3 million gross acres.

<sup>\*</sup>Adapted from presentation at Forum, Discovery Thinking," AAPG Annual Convention and Exhibition, Houston, Texas, USA, April 10-13, 2011

<sup>&</sup>lt;sup>1</sup>Noble Energy, Inc., Houston, TX (scunningham@nobleaff.com)



## Tamar Discovery Levant Basin

AAPG Discovery Forum, April 11, 2011

## **Outline**

- ▶ Noble Energy The Company
- Discovery Thinking Exploration at Noble
- ► The Story of Noble and Tamar
  - Reality vs Possibility
  - ▲ Future Possibilities



## Noble Energy Creating long-term value

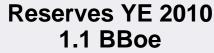
- ► Diversified ... but Focused Asset Portfolio
  - Allows optimal capital allocation for superior returns
- Exploration-led Growth
  - Proven track record, "game-changing" opportunities
- ► Broad Lineup of Major Development Projects
  - ♣ Provides sustainable, visible growth
- Fortress Balance Sheet Strategy
  - Designed to support long-term plans
- Organizational Strength
  - Talent and experience, "action-oriented" culture



### **Balanced and Diversified Portfolio**

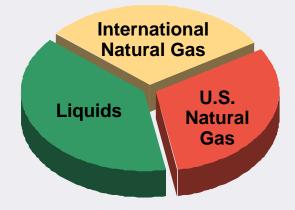
Provides stability and strength

- Leverage to U.S and International Markets
- Exposure to Crude Oil and Natural Gas
- Quality Asset Foundation
  - Resilient to price volatility
  - ▲ Low cost structure
  - ▲ Extensive project inventory
- ► Four Core Operating Areas with Growth Attributes
  - Onshore United States
  - Deepwater Gulf of Mexico
  - West Africa
  - ▲ Eastern Mediterranean





Volumes 2011E 208 to 218 MBoe/d



## **Four Key Operating Areas**

### Sustaining and transforming Noble Energy

#### Onshore United States

- Large inventory of low-risk projects
- Liquid focus with substantial exposure to horizontal Niobrara play

## Gulf of Mexico – Deepwater

- Galapagos well completion work done
- Extensive exploration portfolio

#### West Africa – Offshore EG and Cameroon

- Aseng and Alen liquid developments moving forward
- Additional liquid and gas projects on the horizon

## ▶ Eastern Mediterranean – Offshore Israel and Cyprus

- Growing natural gas markets
- Tamar development sanctioned
- Significant discovery at Leviathan



## Discovery Thinking Exploration Process

### Identify the Opportunity

Disciplined New Ventures assessment process

## Comprehensive Evaluation from Regional to Prospect Scale

Appropriate combination of technologies early in the program

### ► Apply Disciplined Exploration Process

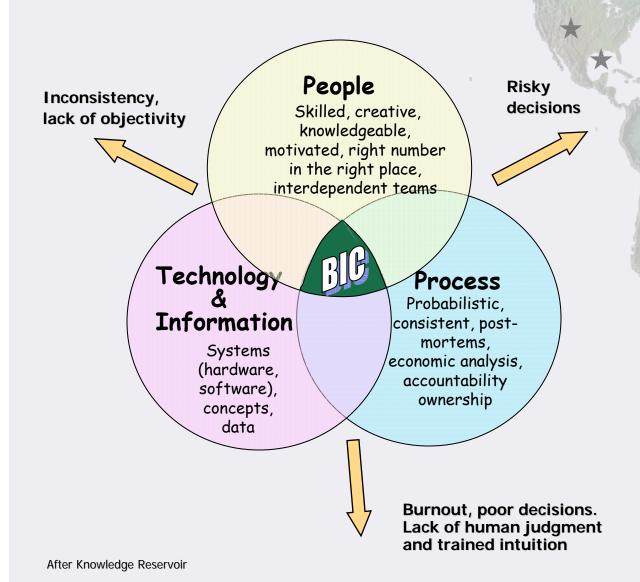
- Robust technology and organization capacity
- Leverage knowledge and ideas
- Probabilistic assessment of opportunities from basin to well recovery
- ▲ Learnings leveraged and integrated into full program
- Exploration peer review and risk analysis

## Apply Disciplined Appraisal Process

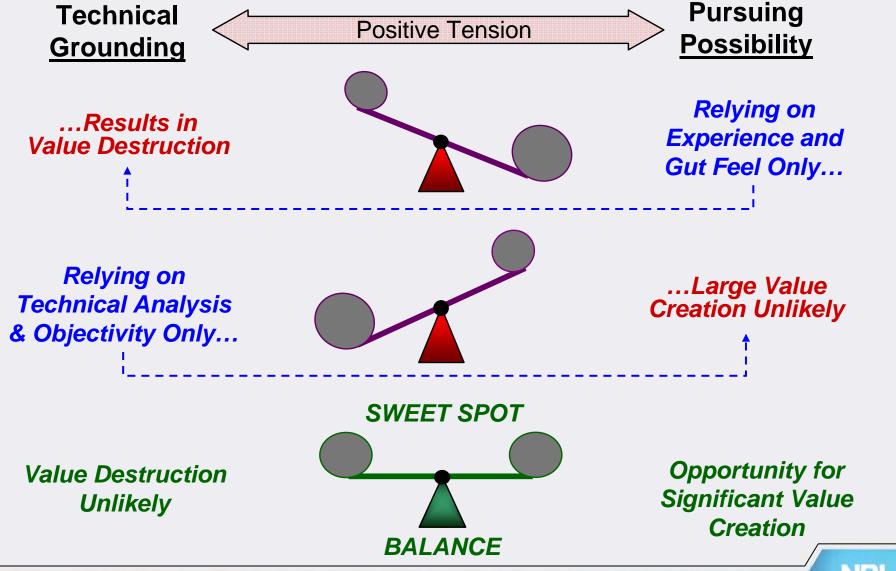
- Evaluate key uncertainties
- Establish data needs and well locations to maximize learning and reduce uncertainty



## Defining the 'Sweet Spot' for High Performance Within the Umbrella of Company Values and Strategy



## The Sweet Spot for Discovery Thinking Maintaining balance and positive tension



## **Exploration Track Record**

The right people, technology, strategy, and processes

### Discovered nearly 2 BBoe in Last 5 Years

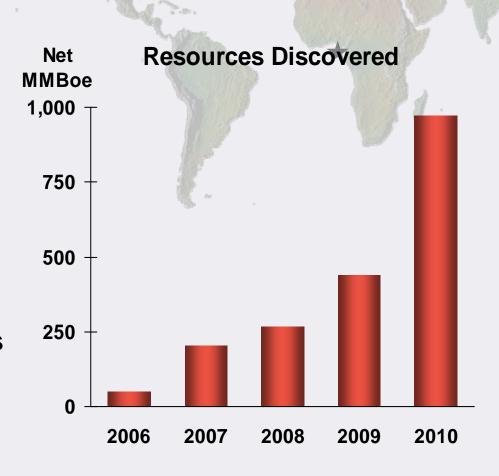
- Very low finding costs per unit
- Replaced about 25 times annual production
- ▲ Led by liquids and international gas

## ► Focus on Large Resource Opportunities

▲ Exposure to new legacy assets

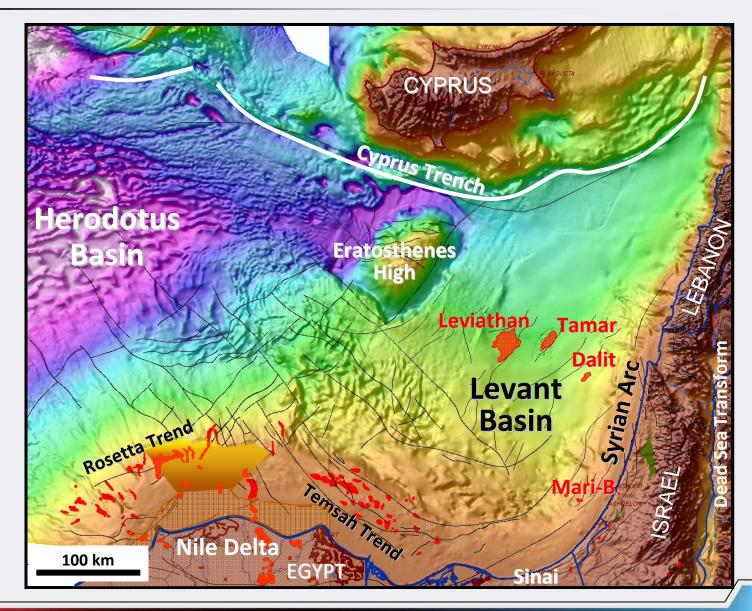
### ► Leverage Exploration Success

 Large acreage positions with similar plays



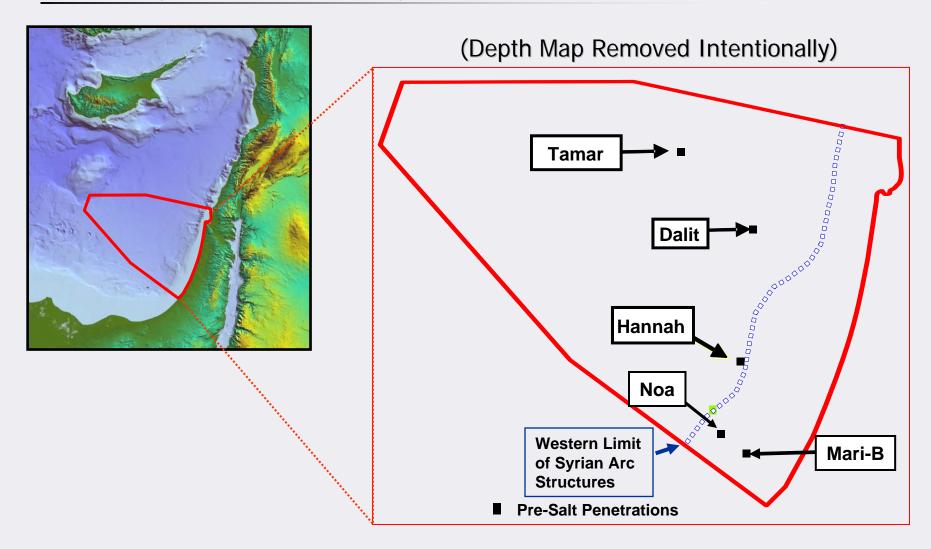
## **Tamar Discovery**

#### The Levant Basin



### **Levant Basin in 2009**

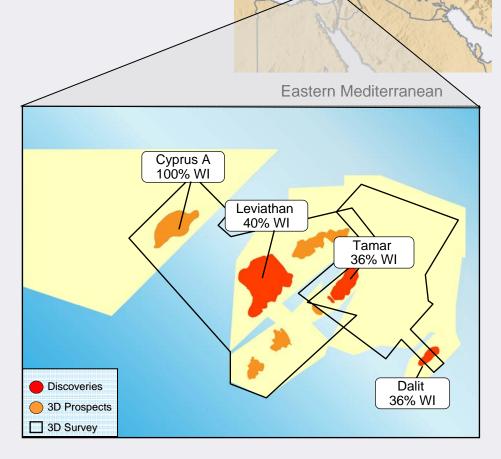
### Essentially Undrilled outside Syrian Arc



**Eastern Mediterranean Exploration** 

Noble's leading acreage position in an emerging basin

- ► NBL Operates ~3 MM Gross Acres
- Four Consecutive Successful Wells
  - Based on geologic model and 3D Interpretation
- Multiple Prospects and Leads Identified
- Additional 3D Seismic Recently Acquired
- ▶ Planning for 3-4 Exploration / Appraisal Wells in 2011
  - Including appraisal of Leviathan





## Discovery Thinking The Tamar Opportunity

### ► Previous Operator Withdrew from Block

- Saw high operational and technical risks
- Did not recognize upside

### ▶ Being the Partner of Choice

- ▲ Importance of local partners and existing relationships
- A Reputation as reliable, effective operator

### Keeping the Possibility Alive

Tenacity of individuals - partners and Noble Energy

#### Other Factors

- Familiarity with Israel market
- Regional and local geologic knowledge
- Successful operations in the past
- Levant Basin virtually undrilled



## Discovery Thinking How We Decided

- Our Diverse and Balanced Portfolio creates opportunity
  - Allows Noble to pursue high risk/high reward ventures
- ► Robust Due Diligence & Peer Review Process
  - After which we assessed it to be moderate not high risk
- ► Asking "Why Not?"
  - ▲ The importance of proving / disproving alternative hypotheses
  - Breaking free of the tendency to embrace Group Think
- Regional "Homework" and Global Analogs
- Acknowledging risk and seeing the possibility

## Discovery Thinking Current Thinking vs Possibility

### **Current Thinking**

No market

Create market

Eastern sediment source Different setting

Flat spots risky Ruled out CO<sub>2</sub>, diagenesis,

seismic multiples, etc.

**Possibility** 

No source rock proven SR could not be *dis*proven,

and it has a flat spot

Prospect evaluation Regional thinking

Difficult to drill - overpressure Technical rigor – moderate

pressure

## Possibility....

## Possibility of Deep Marine Reservoirs

Image Removed Intentionally Image Removed Intentionally

Image Removed Intentionally

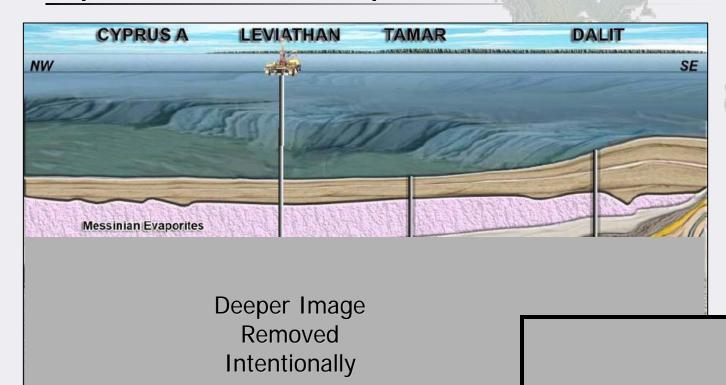


## The Result Tamar Discovery to Production in ~3 years

- ► Discovered in 2009
  - ▲ Current estimate 8.4 TCFG
  - Appraisal well drilled same year
- ► Development Project Sanctioned in 2010
- ► 5 Development wells to be drilled in 2011
- ► First Production in 2012



# The Result Exposure to World Class Exploration Potential



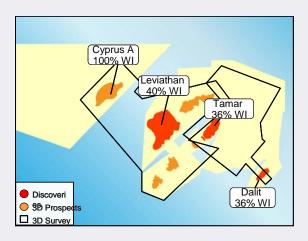
Leviathan Prospect with 16 TCF mean resources

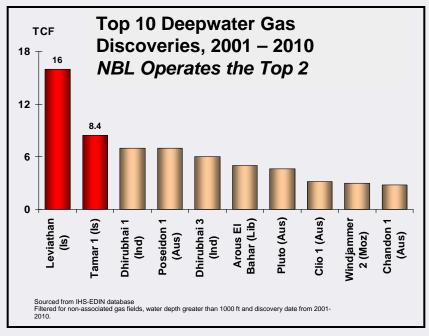
Testing deeper potential

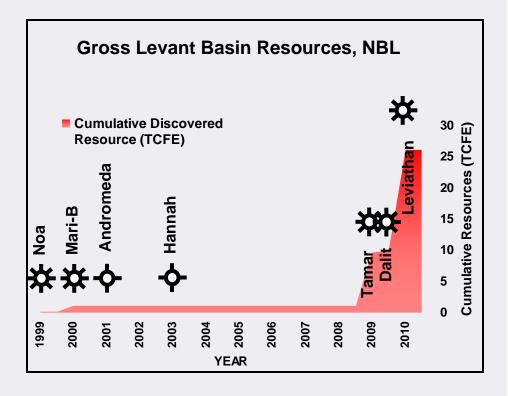
Image Removed Intentionally



## Building a Legacy We are not done







## Acknowledgements Our Partners

**Avner Oil Exploration LP** 

**Delek Drilling LP** 

**Ratio Oil Exploration** 

Isramco Negev 2 LP

**Dor Gas Exploration** 



## Impacting the World



# Forward-looking Statements and Non-GAAP Measures

This presentation includes projections and other "forward-looking statements" within the meaning of the federal securities laws. Any such projections or statements reflect Noble Energy's current views about future events and financial performance. No assurances can be given that such events or performance will occur as projected, and actual results may differ materially from those projected. Risks, uncertainties and assumptions that could cause actual results to differ materially from those projected include, without limitation, the volatility in commodity prices for crude oil and natural gas, the presence or recoverability of estimated reserves, the ability to replace reserves, environmental risks, drilling and operating risks, exploration and development risks, competition, government regulation or other actions, the ability of management to execute its plans to meet its goals and other risks inherent in Noble Energy's business that are detailed in its Securities and Exchange Commission filings. Words such as "anticipates," "believes," "expects," "intends," "will," "should," "may," and similar expressions may be used to identify forward-looking statements. Noble Energy assumes no obligation and expressly disclaims any duty to update the information contained herein except as required by law. Investors are urged to consider closely the disclosures and risk factors in our Form 10-K for the year ended December 31, 2010, available from Noble Energy's offices or website, http://www.nobleenergyinc.com. This form can also be obtained from the SEC by calling 1-800-SEC-0330.

This presentation also contains certain historical and forward-looking non-GAAP measures of financial performance that management believes are good tools for internal use and the investment community in evaluating Noble Energy's overall financial performance. These non-GAAP measures are broadly used to value and compare companies in the crude oil and natural gas industry. Please also see the Appendix to this presentation and Noble Energy's website at http://www.nobleenergyinc.com under "Investors" for reconciliations of the differences between any historical non-GAAP measures used in this presentation and the most directly comparable GAAP financial measures. The GAAP measures most comparable to the forward-looking non-GAAP financial measures are not accessible on a forward-looking basis and reconciling information is not available without unreasonable effort.

The Securities and Exchange Commission permits oil and gas companies, in their filings with the SEC, to disclose proved reserves that a company has demonstrated by actual production or conclusive formation tests to be economically and legally producible under existing economic and operating conditions. Beginning with year-end reserves for 2009, the SEC permits the optional disclosure of probable and possible reserves. We have elected not to disclose the Company's probable and possible reserves in our filings with the SEC. We use certain terms in this presentation, such as "gross mean resources" and "unrisked resource potential," that the SEC's guidelines strictly prohibit us from including in filings with the SEC. These estimates are by their nature more speculative than estimates of proved, probable and possible reserves and accordingly are subject to substantially greater risk of being actually realized. Investors are urged to consider closely the disclosures and risk factors in our Form 10-K for the year ended December 31, 2010, available from Noble Energy's offices or website, http://www.nobleenergyinc.com. This forms can also be obtained from the SEC by calling 1-800-SEC-0330.

For additional information – website http://www.nobleenergyinc.com

