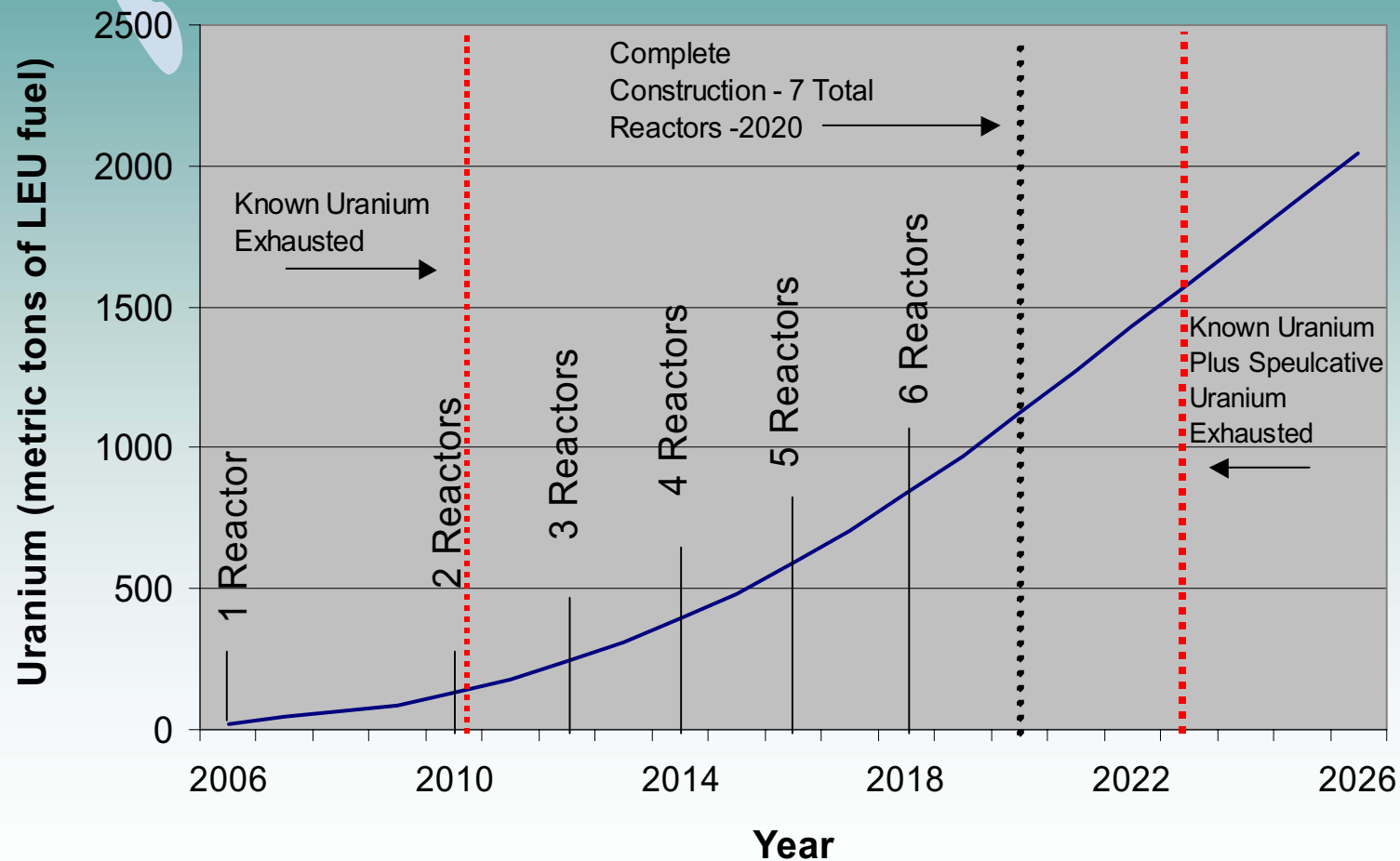
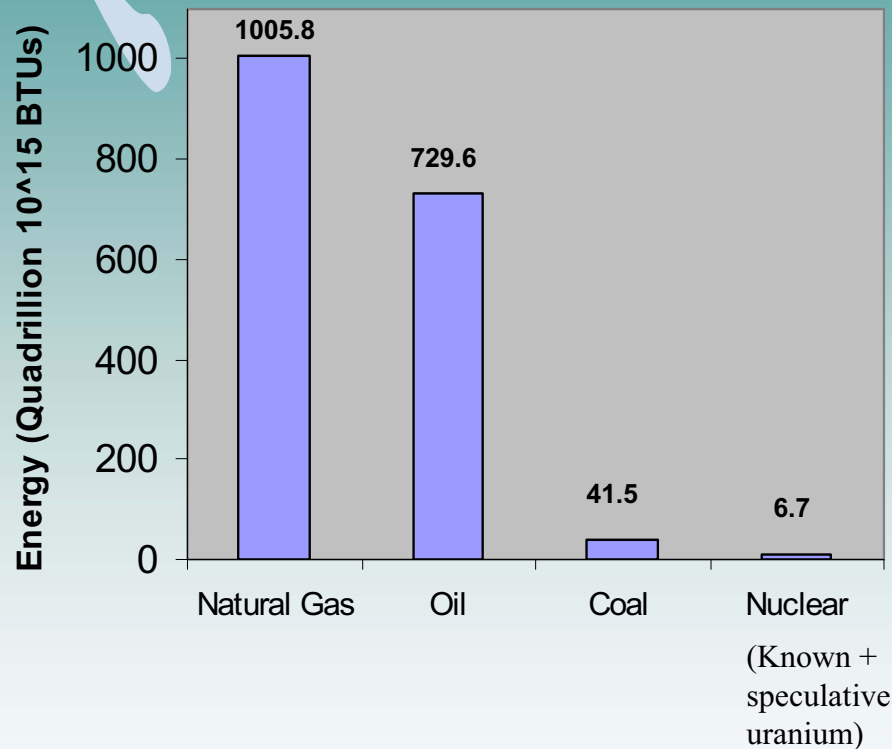


# Fuel Resource Constraints 2006-2026



- Known uranium will be exhausted by 2010 with only two operational reactors.
- Total uranium resources will be depleted by 2023 with all reactors far short of their 40 year design lifetime.

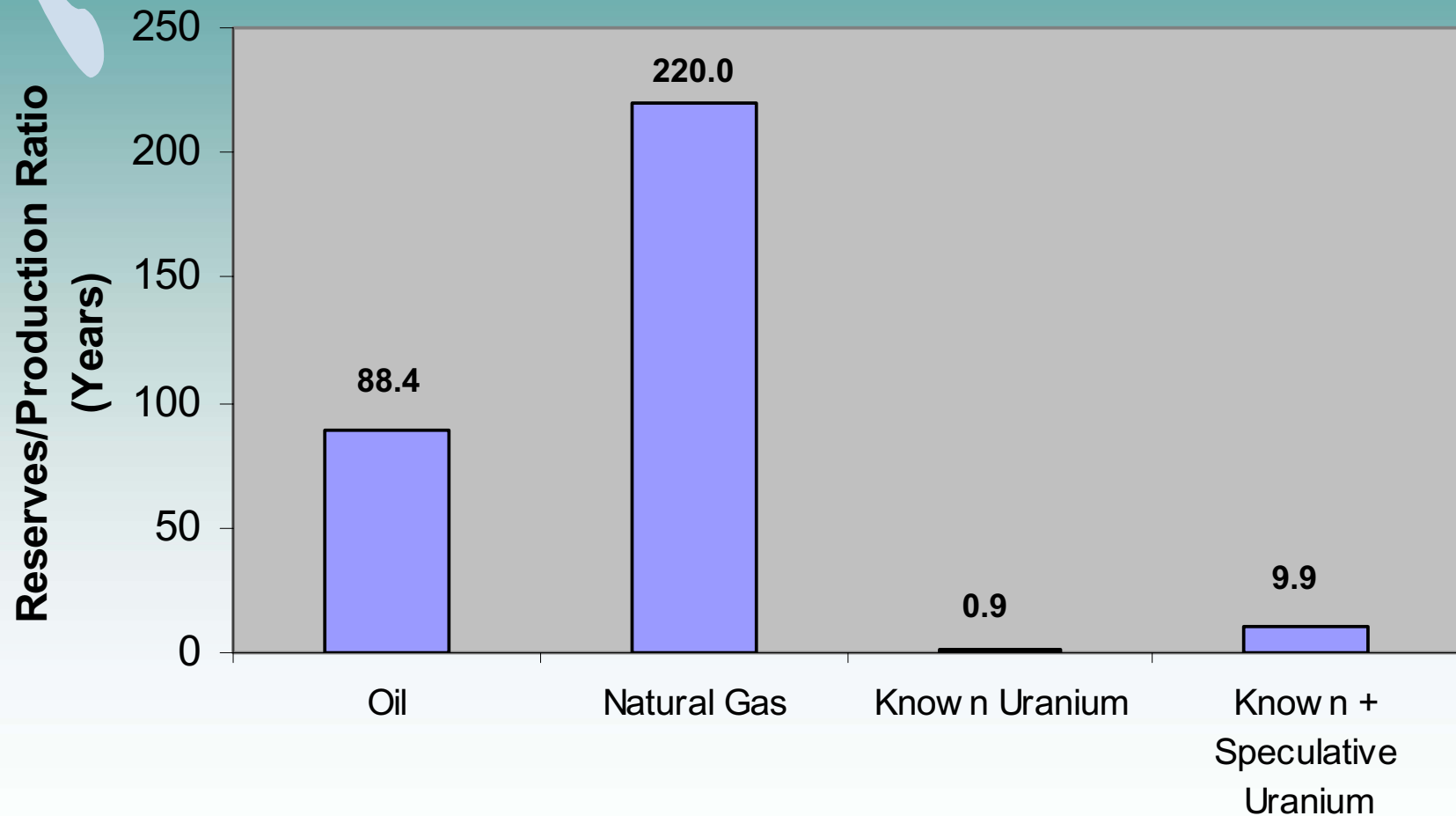
# Which Resource Truly Scarce?



Energy equivalence used = 1070 BTU/ft<sup>3</sup> natural gas, 5.8e6 BTU/barrel oil, 11,000 BTU/lb. coal, 4.41e11 BTU/mton U-235. Source *Nuclear Engineering: Theory and Technology of Commercial Nuclear Power* – Knief. Energy data from March 2005 U.S. EIA Iran Country Analysis Brief.

- Oil
  - 125.8 billion barrels proven reserves
  - Roughly 10% of world total
- Natural Gas
  - 940 trillion cubic feet proven reserves
  - World's 2<sup>nd</sup> largest supply, 15.5% world total

# Duration of Energy Resources Under Current Production and Consumption



Note 1 - Oil production 2004, gross natural gas production 2002 from EIA

Note 2 - Nuclear fuel production based on requirements of 7000 MW nuclear with a once through fuel cycle



## **Section III**

- **Iran's Nuclear Fuel  
Cycle Facilities:  
To What End?**



# **Iran's Program Makes Sense for Nuclear Weapons**

Iran's nuclear program is **well-scaled for a weapons capability**, as a comparison to another state's nuclear weapons infrastructure shows.

When one also considers **Iran's concealment and deception activities...**

**...it is difficult to escape the conclusion that Iran is pursuing nuclear weapons.**



# Uranium Reserves: Only Enough for Weapons

As noted, Iran's uranium resources cannot support the peaceful program Iran says it is pursuing.

However, Iran's uranium resources are more than sufficient to support a nuclear weapons capability.

- The Gachin mine's output (~21 tonnes/yr) alone could supply enough uranium, if enriched, to produce ~4 nuclear weapons/yr.

# Comparing Nuclear Infrastructures

## Another State Iran

Gas Centrifuge Plant



Gas Centrifuge Plant at Natanz





# Comparing Nuclear Infrastructures

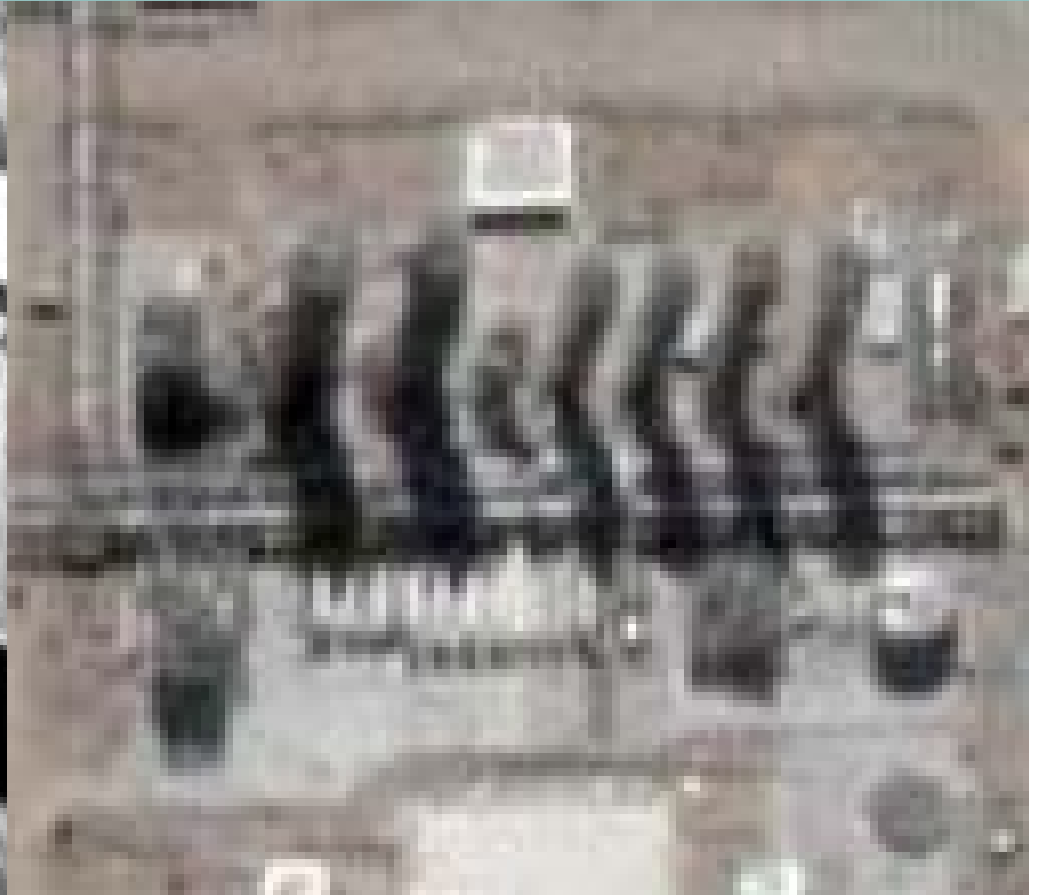
## Another State

~13 Tonne/yr  
Heavy Water Plant



## Iran

~16 Tonne/yr  
Heavy Water Plant





# Comparing Nuclear Infrastructures

## Another State

~40 Megawatt Heavy Water  
Reactor For Plutonium production



## Iran

40 Megawatt Heavy Water Reactor  
at Arak



# Comparing Nuclear Infrastructures

Iran's program is strikingly similar to Another State's Program in other ways:

- Uranium mining – Both States have limited known domestic reserves (Iran ~ 71 tons/year versus ~ 23 tons/year)
- UF<sub>6</sub> Conversion – Both state's seek a 200 ton/year production capacity

# Comparing Delivery Capabilities

Iran's Shahab III and Another State's Variant  
Intermediate-range ballistic missile (IRBM)  
derived from the DPRK's No Dong



System	Range (km.)	Payload (kg.)	CEP
Shahab III	1,300	~1,000	~250 m
Variant	~2,000	700	~250 m
No Dong	1,300	700-1,000	~250 m



No Dong

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# Nuclear Energy or Nuclear Weapons?

- Extensive Concealment and Deception Record
- Once revealed, Iran offered rationale for “peaceful” nuclear fuel cycle.....However:
  - Nuclear energy independence not feasible given ore reserves
  - Iran could maximize its earnings and energy by:
    - Importing nuclear fuel
    - Reducing waste of natural gas currently flared
    - Increasing gasoline production for domestic energy independence
- Iran’s uranium reserves cannot support planned nuclear power plants, but are well-scaled to give Iran a significant number of nuclear weapons.
- Iran’s nuclear program is very similar to another state’s nuclear weapons program.

## **CONCLUSION:**

**Iran's past history of concealment and deception and nuclear fuel cycle infrastructure are most consistent with an intent to acquire nuclear weapons.**