

A fresh look at the role of American resources in the NdFeB Marketplace

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Our Parent

- Unocal, the world's largest publicly traded independent exploration and production company
- $\$8.4 \times 10^9$ revenues 1995
- $\$9.9 \times 10^9$ assets 1995
- 51×10^9 liters/day, natural gas 1995

Molycorp

- Founded in 1920
- Molybdenum
 - Questa, New Mexico
 - Washington, PA
- 1951 Molycorp buys Mountain Pass
- 1978 Unocal purchases Molycorp

Mountain Pass, CA

- Discovered in April 1949
- Purchased by Molycorp 1951
- Operations
 - Europium oxide and Bastnasite, 1965
 - Cerium and Lanthanum concentrates, 1965
 - Samarium oxide, 1982
 - Neodymium oxide, 1989

Resources: One number explains it all. Right?

Reserves

Mine production

Theoretical Nd availability

Actual Nd availability

Resources: One number explains it all. Right?

	<u>Total</u>
Reserves	100,000
Mine production	60
Theoretical Nd availability	6
Actual Nd availability	1

Resources: One number explains it all. Right?

	<u>Total</u>	<u>Mtn. Pass</u>
Reserves	100,000	1/6
Mine production	60	1/3
Theoretical Nd availability	6	1/3
Actual Nd availability	1	1/10

New balance: The lumpy mattress effect.

- The past
- The present
- The future

Jerk: Sit down, you're rocking the boat.

- What is jerk?
- Capital intensive vs. labor intensive
- Changing course quickly

Cooperative Phenomena: Good Physics. Good business?

- What are cooperative phenomena?
- Is there a connection between the physics and the marketplace?

Conclusions

- non issues: resources, deposit size and mine production
- extra neodymium will come from increased separation capacity
- efficient growth scenario: steady growth and healthy players
 - cooperation and openness promote efficiency

The future is a race between
education and catastrophe.

H.G. Wells