



Medallion
R E S O U R C E S

Rethinking Rare Earths

Investor Presentation

Q4 2015





Rethinking Rare Earths



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Medallion Resources

Company Snapshot

- **Direct approach** to rare-earth production— purchase and import rare-earth ore to a proposed North American processing plant — extract and sell rare-earth concentrates
- Target mineral is monazite sand
 - Readily available as a by-product from heavy-mineral-sands
 - Well-understood metallurgy
- Low capex / low opex – quick production
- Have a first-class technical team comprised of veteran geologist and rare-earth expert Dr Bill Bird — a recognized rare-earth-industry leader.

TSX.V : MDL

OTCQX : MLLOF

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Rare Earth Elements

Period	Group 1										Group 18																									
1	1 H 1.008										2 He 4.008																									
2	3 Li 6.941		4 Be 9.012												5 B 10.81		6 C 12.01		7 N 14.01		8 O 16		9 F 19		10 Ne 20.18											
3	11 Na 22.99		12 Mg 24.31												13 Al 26.98		14 Si 28.09		15 P 30.97		16 S 32.07		17 Cl 35.45		18 Ar 39.95											
4	19 K 39.10		20 Ca 40.08		21 Sc 44.96		22 Ti 47.88		23 V 50.94		24 Cr 52		25 Mn 54.94		26 Fe 55.85		27 Co 58.93		28 Ni 58.69		29 Cu 63.55		30 Zn 65.39		31 Ga 69.72		32 Ge 72.59		33 As 74.92		34 Se 78.96		35 Br 79.9		36 Kr 83.8	
5	37 Rb 85.47		38 Sr 87.62		39 Y 88.91		40 Zr 91.22		41 Nb 92.91		42 Mo 95.94		43 Tc (98)		44 Ru 101.1		45 Rh 102.9		46 Pd 106.4		47 Ag 107.9		48 Cd 112.4		49 In 114.8		50 Sn 118.7		51 Sb 121.8		52 Te 127.6		53 I 126.9		54 Xe 131.3	
6	55 Cs 132.9		56 Ba 137.3		57 La 138.9		58 Ce 140.1		59 Pr 140.9		60 Nd 144.2		61 Pm (147)		62 Sm 150.4		63 Eu 152		64 Gd 157.3		65 Tb 158.9		66 Dy 162.5		67 Ho 164.9		68 Er 167.3		69 Tm 168.9		70 Yb 173		71 Lu 175			
7	87 Fr (223)		88 Ra (226)		89 Ac (227)		90 Th (232)		91 Pa (231)		92 U (238)		93 Np (237)		94 Pu (242)		95 Am (243)		96 Cm (247)		97 Bk (247)		98 Cf (249)		99 Es (254)		100 Fm (253)		101 Md (258)		102 No (259)		103 Lr (261)			

Demands for Rare Earths

Market Overview



ENERGY PRODUCTION

ENERGY REDUCTION

ENERGY EFFICIENCY

LIFESTYLE

La

Petroleum Refining

Nd Dy Tb

High-Powered Electric Motors

La

New Generation Vehicles

Ce

UV Filters in Glass

Nd

Reducing Fuel Consumption

Dy

Lighter Vehicles - Improved Performance

Nd Sm

New Generation Vehicles

La

Rechargeable Batteries

Pr Eu

Energy-Efficient Lighting

Eu Tb Y

Colour Screen LCDs/PDPs

Nd

Components to Hardware

Nd Gd Ce

Medical Services

La (Lanthanum), Nd (Neodymium), Dy (Dysprosium), Tb (Terbium), Ce (Cerium), Sm (Samarium), Pr (Praseodymium), Eu (Europium), Y (Yttrium), and Gd (Gadolinium)

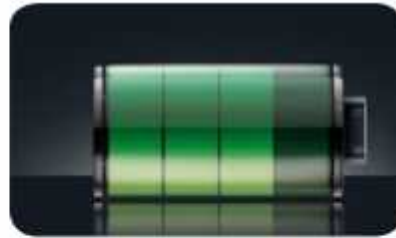
Specific uses of Rare Earths

Market Overview



MAGNETS

- Motors
- Disc Drives & Disc Drive Motors
- Power Generation
- Actuators
- Microphones & Speakers
- MRI
- Anti-lock Brake System
- Automotive Parts
- Communications Systems
- Electric Drive & Propulsion
- Frictionless Bearings
- Magnetic Storage Disk
- Microwave Power Tubes
- Magnetic Refrigeration
- Magnetostrictive Alloys



METAL ALLOYS

- Hydrogen Storage (NiMH Batteries, Fuel Cells)
- Steel
- Lighter Flints
- Aluminum/Manganese
- Cast Iron
- Superalloys



AEROSPACE

- Fly-by-Wire
- Guidance Systems
- Energy/Engines
- Structure
- Instruments
- Opto-electronics



ELECTRONICS

- Display phosphors (CRT, PDP, LCD)
- Medical Imaging Phosphors
- Lasers
- Fiber Optics
- Optical Temperature Sensors

CERAMICS

- Capacitors
- Sensors
- Colorants
- Scintillators

GLASS

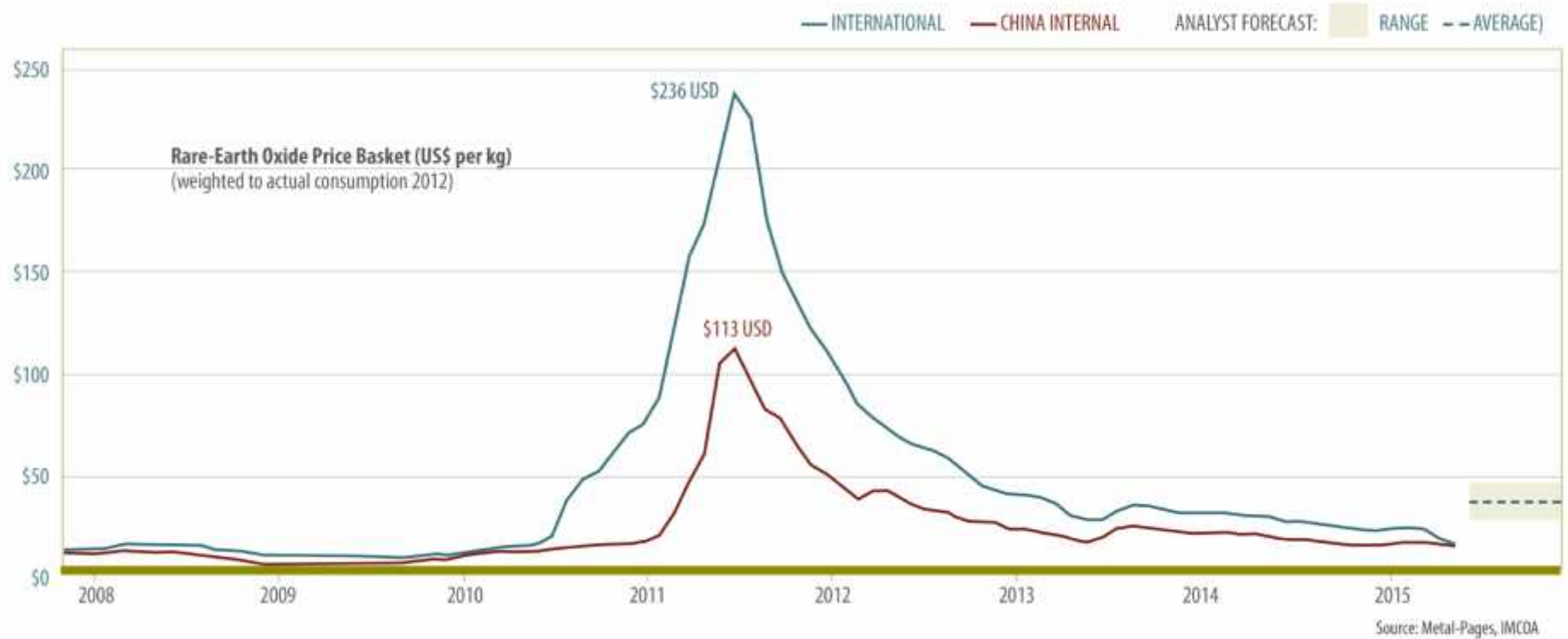
- Polishing Compounds
- Optical Glass
- UV-Resistant Glass
- Thermal Control Mirrors
- Colorizers/Decolorizers

OTHER

- Water Treatment
- Flourescent Lighting
- Pigments
- Fertilizer
- Medical Tracers
- Coatings

Rare-Earth Prices Up . . . Then Down

Industry Insights





Industry Insights

- Over 30 years, backed with good geology, state support and lax environmental standards, China came to dominate the rare-earth industry
- In past 10 years China has pursued rare-earth industrial policy ... **ensuring access of rare-earths for its trillion-dollar manufacturing economy.** In 2010, the Chinese government ordered:
 - Export quotas and taxes
 - New environmental regulations / enforcement
 - State companies to consolidate rare-earth production
- Rest of the world response:
 - Panic / hoarding / price spike
 - Frenzy of funding exploration and development projects (300!)
 - Molycorp and Lynas – got to production
 - **Ultimately:** Lessons learned about complexity of rare-earth processing



Industry Insights

- New supply capacity, outside of China, has been constrained due to:
 - Significant metallurgical (technical) challenges
 - High capital costs for new mines, processing and infrastructure.
- Virtually all of China's heavy-rare-earths (HREE) come from an unusual geological setting in South China — there is no easy path to significant heavy-rare-earth production
- Now supply and demand is in balance but future demand for rare earths cannot be met by China alone
- The by-product monazite represents the best rare-earth opportunity to deliver significant amounts of the key elements used in permanent magnets:

Neodymium **Dysprosium**
Praseodymium **Terbium**



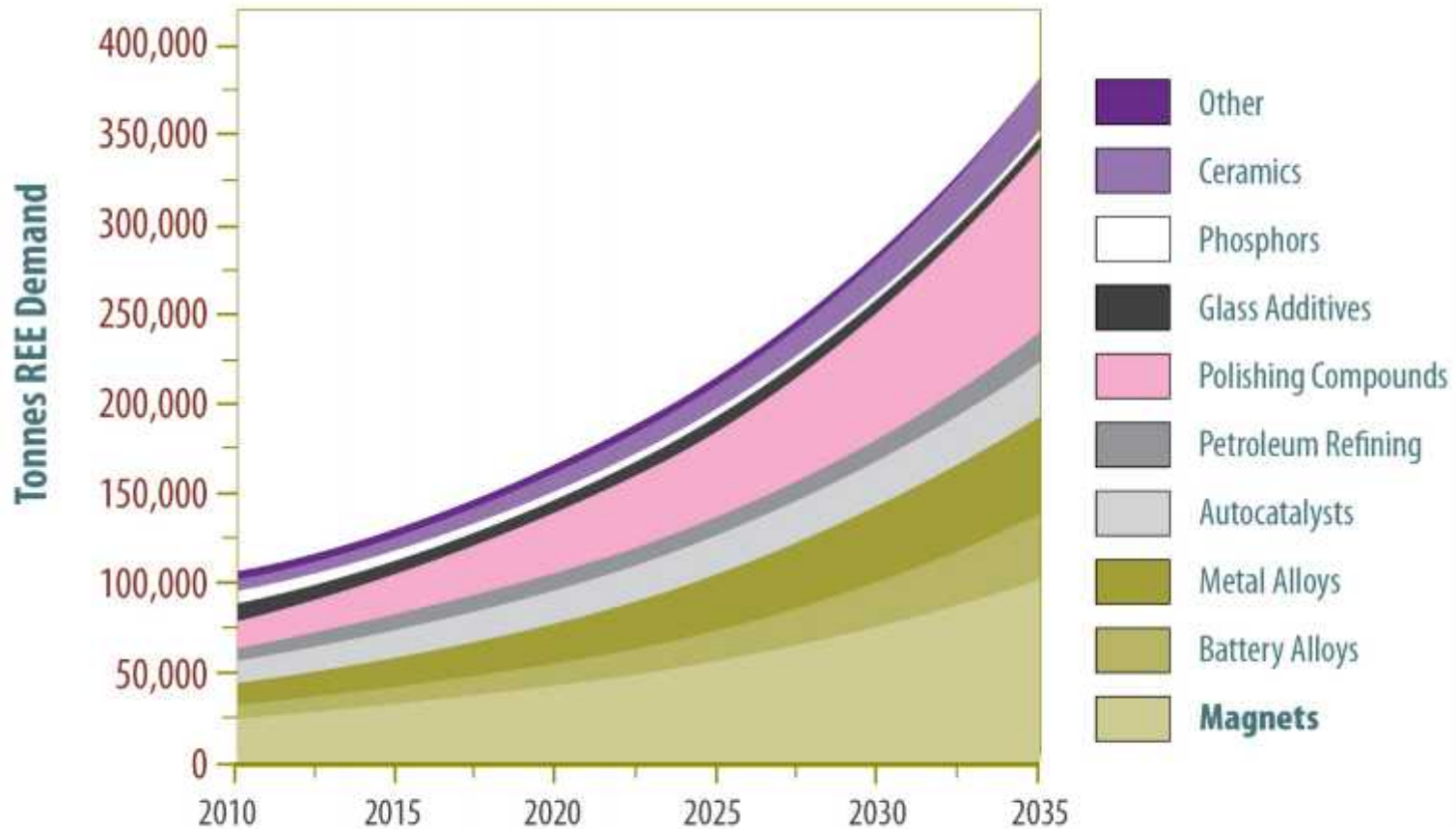
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Evolution of Market Distribution of REE Demand

Industry Insights



Source: Alonso, E., Sherman, A., & Kirchain, R. (2012). Evaluating Rare Earth Element Availability: A Case with Revolutionary Demand from Clean Technologies. *Massachusetts Institute of Technology: Environmental Science & Technology*, 46, 3406-3414

Monazite: Major Rare-Earth Mineral

- A phosphate mineral – contains 50-60% rare earths
- World’s original rare-earth source.
- Concentrated during heavy-mineral sands processing – then discarded or stockpiled
- Heavy-mineral-sands producers are:
 - Focused on titanium and zircon
 - Not interested in the small and opaque rare-earth industry
- Monazite easily processed using **well-understood metallurgy**

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Monazite Concentrate



Monazite Concentrate

Distribution of monazite rare-earth components

Lanthanum Oxide	22.2
Cerium Oxide	46.6
Neodymium Oxide	18.4
Praseodymium Oxide	5.1
Samarium Oxide	3.5
95.8 Total Lights	
Europium Oxide	0.3
Gadolinium Oxide	2.8
Others	1.1
4.2 Total Heavies	
(Yttrium excluded)	
100.0	

Average of 4 monazite beach sand deposits. Source: USGS

RARE EARTHS
50 - 60%
of monazite concentrate

THORIUM
(Must be sequestered)
5 - 10%

PHOSPHATE
For fertilizer
30 - 40%



Countries with 50,000+ tonnes

Monazite Sources





Production Strategy

- Medallion is convinced that projected global rare-earth demand in the near and medium term cannot be met through Chinese production or the development of known hard-rock occurrences:
 - Hard-rock, rare-earth metallurgy is very complex.
 - Many projects lack infrastructure.
 - Capital costs can become prohibitive.
- US Geological Survey confirms that monazite is a major source of potentially economical rare earths.
- Medallion is actively pursuing monazite-processing partnerships and monazite-purchase agreements to advance its rare-earth production strategy.
- Based on critical success factors, Medallion is considering several NA-based locations for its proposed large-scale monazite-based rare-earth processing facility.

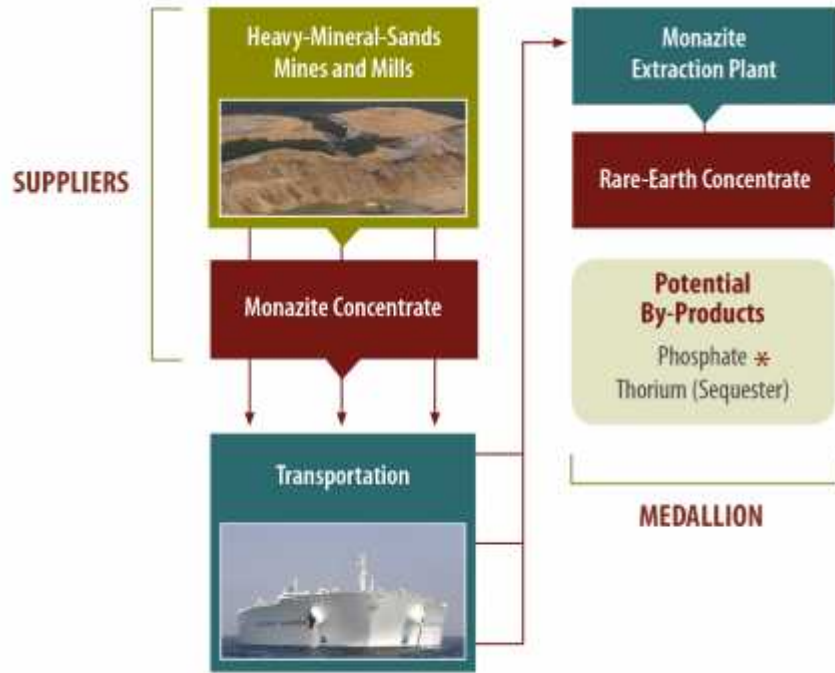
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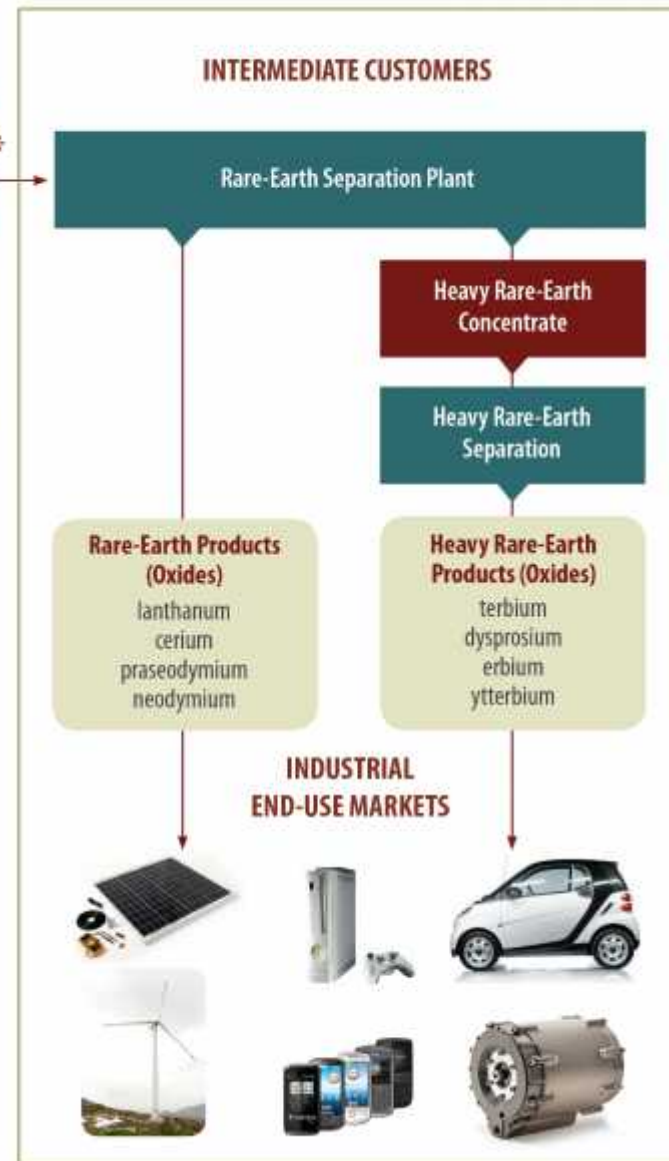


Rare-Earth-Production Flow



* Medallion Commercial Products

Fast-Track Strategy



Milestones 2014-2015

Production Strategy

RARE-EARTH PROCESSING AND PRODUCTION		
✓	October 2015	Provide Rare Earth Product Samples to Industry
✓	August 2015	Produce Phosphate By-Product from Extraction process
✓	August 2015	Medallion Appoints South-East Asian Monazite Agent
✓	May 2015	Lab-scale tests confirm process design plans
✓	Jan 2015	Seeking Rare-Earth Processing Sites in North America
✓	Oct 2014	Initiates Lab-scale Tests to Validate Metallurgical Process
FINANCE / CORPORATE		
✓	October 2015	Closes \$225,000 Private Placement
✓	May 2015	Closes \$325,000 private placement.
✓	March 2015	Investor relations firm R+R Consulting appointed.
✓	January 2015	Closes \$250,000 private placement.
✓	October 2014	Don Lay appointed CEO - Dr Bill Bird new Chief Technical Advisor
✓	July 2014	David Shaw appointed to Board of Directors.



Building a Safe Rare-Earth Facility

Environmental

- Medallion is committed to following industry best-practices and accepted international environmental and safety standards.
- SENES Consultants investigated issues associated with monazite processing and concluded that, with proper design and operation (including radiological protection at critical points to handle and sequester thorium), there are no significant safety or environmental concerns.
- All rare-earth deposits have radioactivity issues.
- Monazite today is processed in China and India; Brazil and Russia are planning monazite processing.
- The management and storage of monazite-processing wastes, including thorium, can and will be handled safely.

Medallion Approach

Conventional and Rare-Earth Project Exploration and Development Timeline



Source: JP Morgan, IMCOA, Company reports

Monazite By-Product Approach





Management

- **Donald M Lay, BSc. President & CEO**
15+ years of international experience in public and private venture-capital and project funding.
- **William H Bird, PhD, PGeo Senior Technical Advisor & Director**
40+ years in mineral exploration. He is a recognized rare-earth expert with a worldwide rare-earth technical network.
- **Tom Arnould, CA CFO & Corporate Secretary**
30+ years in mergers and acquisitions and senior finance roles.



World-Class Talent

Advisors / Consultants

- **Anthony Mariano, PhD** — **Advisor / Consultant** — Internationally renowned rare-earth consultant, 50+ years experience in mineral exploration, former advisor to Molycorp Inc and currently advises Rare Element Resources Ltd and other potential rare-earth producers.
- **James Clark, PhD, LGeo** — **Advisor** — VP Exploration for Rare Element Resources Ltd, 30+ years experience in geology and mineralogy of rare earths and rare metals, including work with Molycorp Inc.
- **David Shaw, PhD, PGeo** — **Director** — Consulting Geologist, Director of First Majestic Silver, former Director of Talison Lithium Limited, former Chairman Salares Lithium Inc, 30+ years in global exploration and mining finance.
- **Bob Roe, MS Geosciences** — **Advisor / Consultant** — Consulting mineral-exploration geologist, formerly with Rio Algom, Phelps Dodge, and Kerr McGee Corporation, 30+ years experience in heavy-mineral-sands deposits.
- **Warwick Bartle, Consultant** — 50+ year career in minerals sands sales and marketing — experience in North America, Australia, Africa and South America



Looking Forward

Upcoming News Flow

- Confirm customer interest in sample product -- from bench level tests
- Pilot plant plans – purposes:
 - Test different monazite feeds
 - Process Optimization
 - Investors, customers, suppliers
 - Bankable FS sign-off
- Initiate offtake agreements for rare-earth concentrates
- Site selection progress
- Report on monazite feedstock progress





Investment Summary

- Rare-earth processing is complex — Medallion has a straightforward approach – both technically and financially
- To market *sooner -- generating revenue* before peers
- Several North American locations, with excellent infrastructure and costs profiles are being considered
- Medallion possesses significant intellectual horsepower in the complex rare-earth industry
- Profitable near-term production is the goal and Medallion has clear advantages with an economical and sustainable rare-earth strategy.

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Share Information

Shares issued:	73.9 million shares + 4.5 million options + 16.1 million warrants
Fully diluted:	94 million shares
Market capitalization:	~\$2.5 million
52 week high - low:	\$0.01 - \$0.065
Institutional holdings:	~10% (plus 8% insiders)





Rethinking Rare Earths

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