

SHINE Snapshot

SHINE has made leading progress toward U.S.-based Mo-99 production

- One of few projects aggressively pursuing new irradiation and processing infrastructure
- Prototype facility located in Monona, WI
- Current key activities

Regulatory:

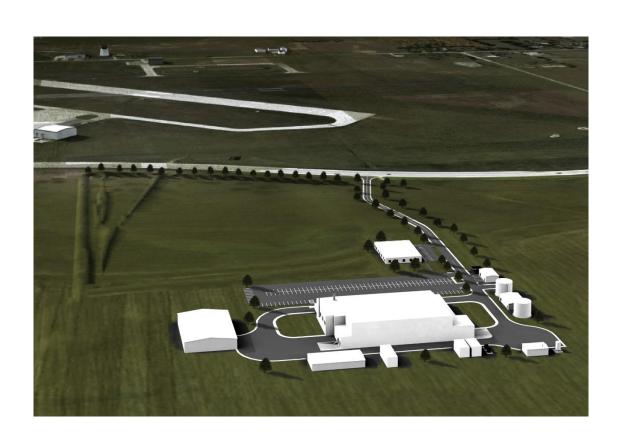
NRC construction permit (expected early 2016)

Commercial:

Two supply agreements executed; others under negotiation

Fundraising:

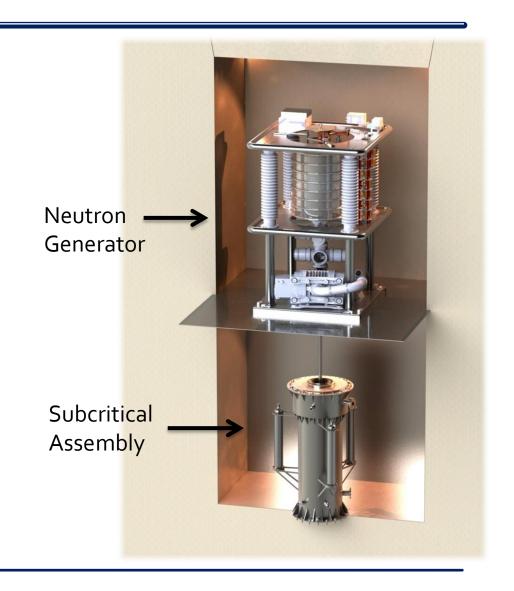
- Over \$25M private investment to date
- Over \$40M total
- Leading efforts to establish domestic fission-based isotope supply



SHINE Technology Overview

A modernized approach to making Mo-99

- Integrated production and refining
- SHINE irradiation unit is a hybrid
 - Accelerator-based D-T neutron generator acts as "spark plug"
 - Neutrons multiply in subcritical uranium sulfate solution, allowing for very high yield
- Plant capacity of 4000 6-day Ci/week
- Fission Mo allows use of existing supply chain, no changes to pharmacy practices
- Cost effective approach
- Fission process ensures access to other isotopes, including I-131 and Xe-133



Technology Milestones

Major technical risks have been eliminated

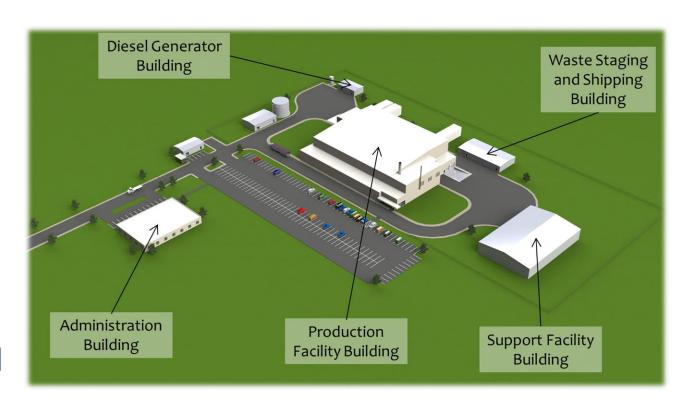
- Accelerator/Neutron Generator
 - Plant-scale accelerator demonstrated at full scale
 - 99% uptime on 24 hour run
 - Thousands of hours logged on similar accelerators
- Target/Chemistry
 - High process yields demonstrated
 - Target recycling demonstrated
 - Production of Mo-99 to commercial purity standards at Argonne
- Many other technical demonstrations complete
 - Other plant systems are variants of systems that have been in use for decades



Facility Design and Site Progress

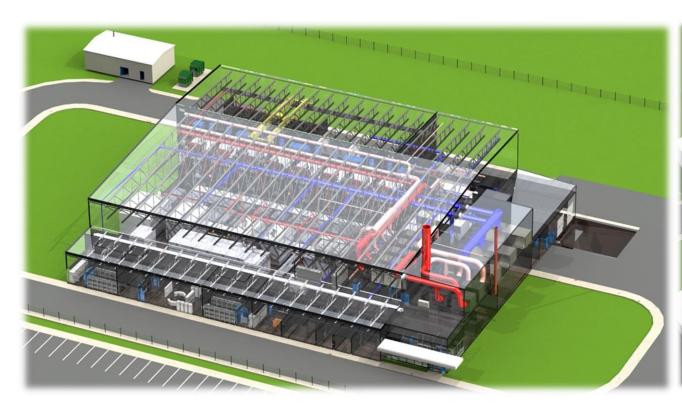
Major facility design and community integration effort has taken place

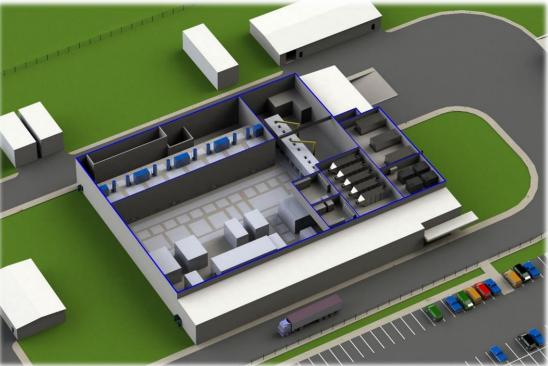
- Preliminary design completed early 2013
- Approximately 55,000 sq. ft.
 hardened production facility
- 8 irradiation units ensures high reliability, flexible production schedule
- Independent hot cell chains further increase reliability and flexibility



Facility Design Progress

Design maturity sufficient for construction permit, including safety significant features





Regulatory

SHINE noted as model applicant and "moving at the speed of light" by NRC

- Submitted construction permit application in early 2013
- Have moved rapidly through application process
- Draft Environmental Impact Statement issued in May
- Construction permit issuance expected early 2016

"The Commission has approved publication of a Direct Final Rule as one step ... addressing the construction permit application from SHINE. Others are not as far along in the process."

> -- Allison M. Macfarlane, NRC Chairman, August 27, 2014



NRC Construction Permitting Process

Milestone	Date	Status
Receipt of Construction Permit Application (Part 1 of 2)	March 2013	Complete
Receipt of Construction Permit Application (Part 2 of 2)	May 2013	Complete
Docketing of Construction Permit Application (Part 1 of 2)	July 2013	Complete
Environmental Scoping Meeting	July 2013	Complete
Environmental Site Audit	August 2013	Complete
Issuance of Request for Additional Information on Environmental Report	August 2013	Complete
Docketing of Construction Permit Application (Part 2 of 2)	December 2013	Complete
Issuance of Request for Additional Information on Preliminary Safety Analysis Report and Environmental Report	September 2014	Complete

Milestone	Date	Status
Issuance of Request for Additional Information on Preliminary Safety Analysis Report and Environmental Report	September 2014	Complete
Issuance of Supplemental Requests for Additional Information on Preliminary Safety Analysis Report and Environmental Report	January 2015 March 2015	Complete Pending
Completion of Draft Environmental Impact Statement	May 2015	Complete
Advisory Committee on Reactor Safeguards Subcommittee Meetings	June-Sept 2015	Underway
Advisory Committee on Reactor Safeguards Full Committee Meeting	October 2015	Pending
Publication of Safety Evaluation Report	October 2015	Pending
Publication of Environmental Impact Statement	October 2015	Pending
Mandatory Hearing on Construction Permit Application	December 2015	Pending

Commercial Progress

Market conditions continue to provide unique opportunity for SHINE

- Supply agreements signed with GE
 Healthcare and Lantheus Medical
 Imaging in 2014
 - Only definitive agreements with a U.S.based producer
 - First supply agreements that don't rely on government-funded infrastructure
- Additional supply agreements under negotiation

"GE Healthcare is very pleased to have entered into a long-term supply agreement with SHINE. The technology represents a significant, safe and viable option for the production of molybdenum-99 in the future. We believe SHINE will help secure supply for global medical communities and their patients."

❖ Jan Makela, GM of GE Healthcare Life Sciences Core Imaging April 4, 2014

"Strategic sourcing of Mo-99 is a key priority at Lantheus, and our agreement with SHINE is one important step in our ongoing proactive efforts to strengthen and diversify our supply to ensure the nuclear medicine community and patients have reliable access to TechneLite in the future."

Jeff Bailey, President and Chief Executive Officer of Lantheus Medical Imaging November 3, 2014

Path Forward

Industry leading progress has been made, focus is now on securing construction financing

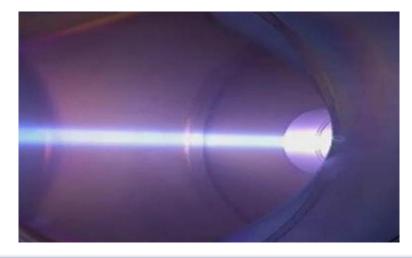
- Invested 5+ years and over \$40M so far:
 - ~\$14 million federal
 - Almost \$30 million non-federal
- Industry-leading accomplishments:
 - Proven technology
 - Proof of commercial viability through customer contracts
 - · Strong regulatory track record
- Plant will be first new infrastructure to produce Mo-99 and other isotopes in the US—will not rely on government-subsidized, aging, HEU-fueled infrastructure
- Pursing multiple avenues to secure construction financing—time to market roughly three years from full financing
- Full use of NNSA cost-share authority provided by AMIPA, would unlock private match immediately
 - Up to 80/20 cost share for R&D
 - Up to 50/50 for construction
- Consistent with NSAC recommendations for the past two years

In Conclusion...

SHINE's technology and processes have several clear competitive advantages

Demonstrated, Patented Technology

- Accelerator technology replaces nuclear reactor
- Avoids the use of HEU entirely
- Reusable liquid target allows simplified production and recovery
- Proprietary process combines a number of already-proven technologies



Superior Economics

- U.S.-based, avoids significant transportation loss
- Operating costs much lower than reactor
- Substantially reduced material costs: no nuclear reactor, reusable target

Compatible with Existing Market

- Product fits seamlessly into the existing supply chain
- Utilizes existing technetium generators
- Market validation supply agreements executed with two of the largest Mo-99 buyers

Questions?

We appreciate your time and encourage follow up discussions

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