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LANSCCE Accelerator Modernization Project (LAMP)

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LAMP Project Director

May 26, 2026



LANSCCE ACCELERATOR
MODERNIZATION PROJECT

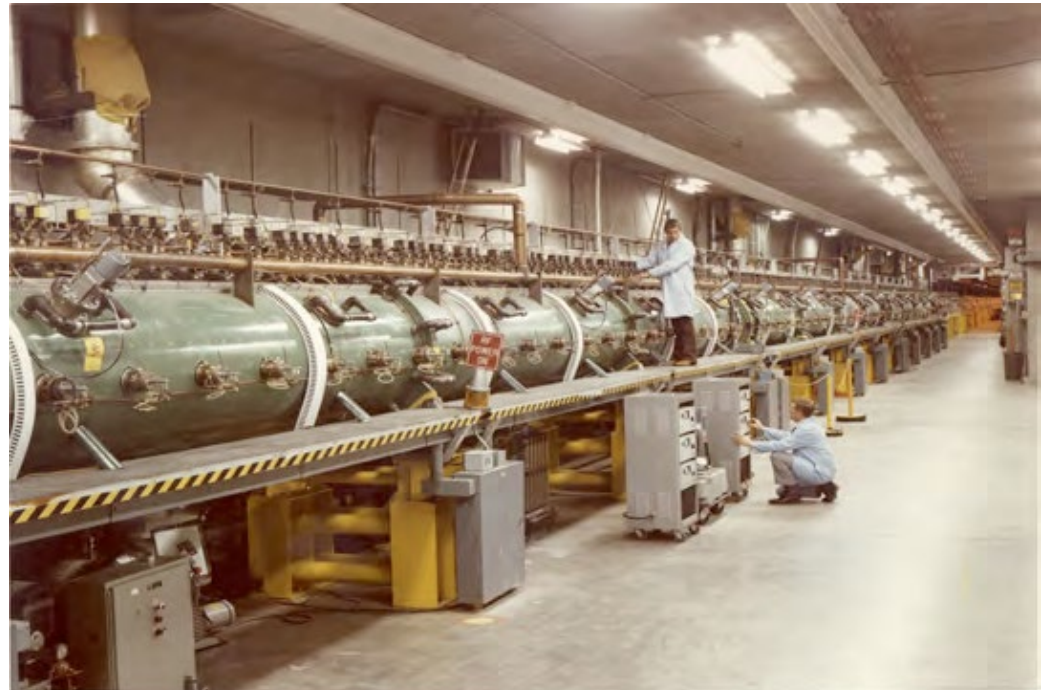
LANSCCE overview and missions



Original Components of the LANSCE Front End



750 kV Cockcroft-Walton Injector



100 MeV Drift Tube Linac

LAMP scope is to replace the LANSCE Front End

- **The Front End is a single point-of-failure and long-term facility risk due to obsolescence and unexpected failures.**
- Cockcroft-Walton injector
 - No supplier base for critical elements from 1960s components and materials (e.g., insulating column, transformers)
 - Beam current inconsistencies (power tube voltage droops)
 - Requires SF₆, a potent greenhouse gas
 - Susceptible to arc breakdowns during wildfire season
- Drift tube linac (DTL)
 - 2019 DTL #3 tank crack due to metal fatigue and thermal cycling. Required a confined space weld operation in a radiological environment and resulted in significant lost beamtime
 - Contributes to long LANSCE start-up period after maintenance outages
- **The eventual loss of the critical components in these systems will result in a multi-year shutdown to all experiments at LANSCE while we attempt to recover current capabilities**



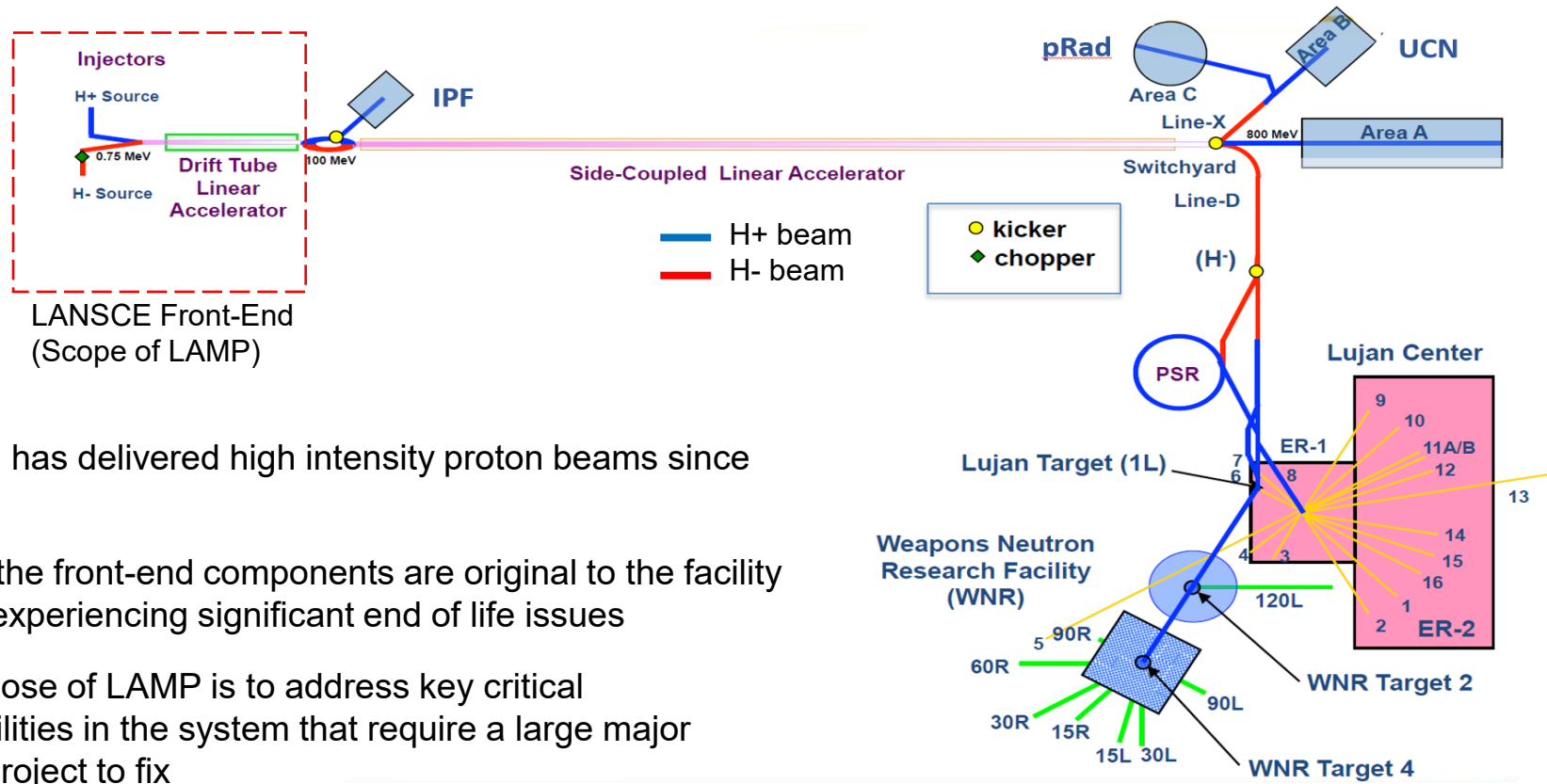
Failed weld inside drift tube linac caused significant loss of beam time



No manufacturing base for insulating column or transformers

Cockcroft-Walton injector

LANSCe Accelerator Modernization Project Scope

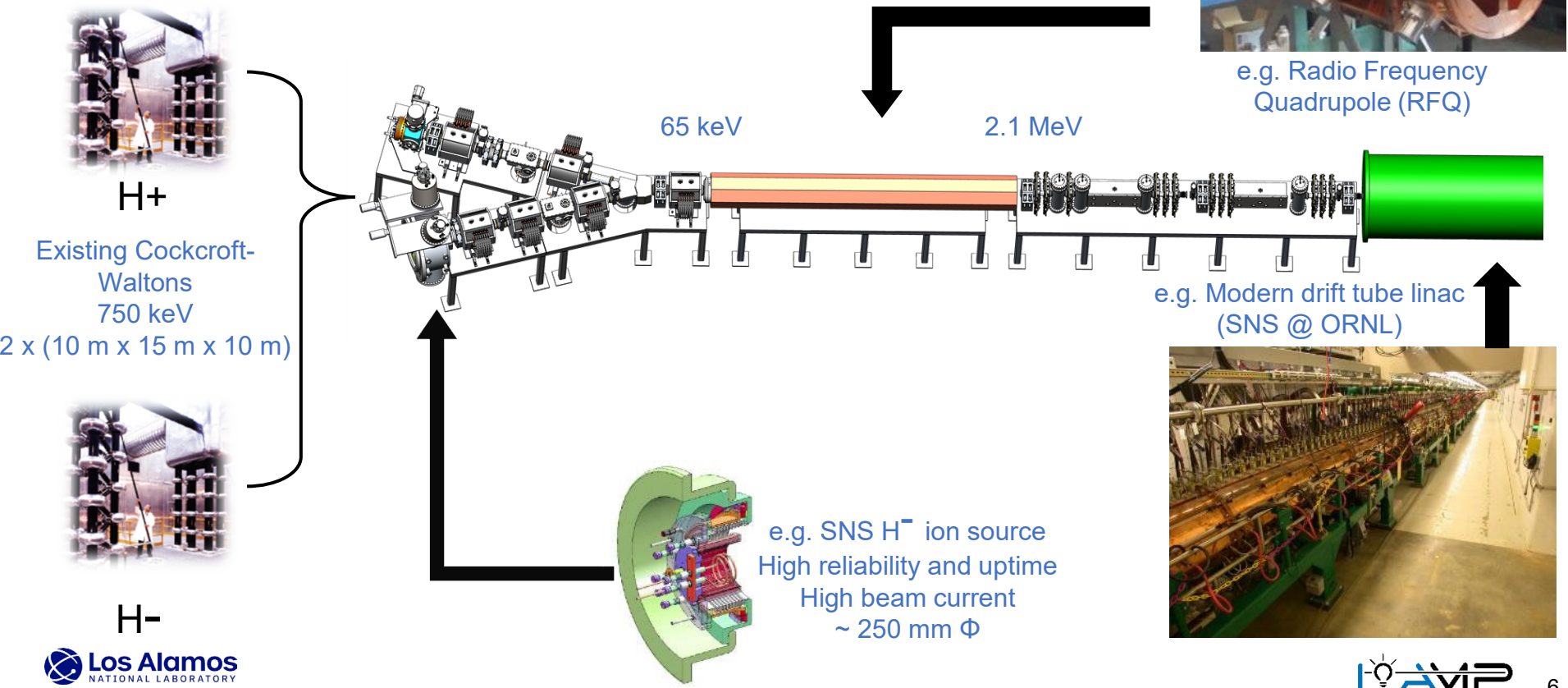


LANSCe has delivered high intensity proton beams since 1972

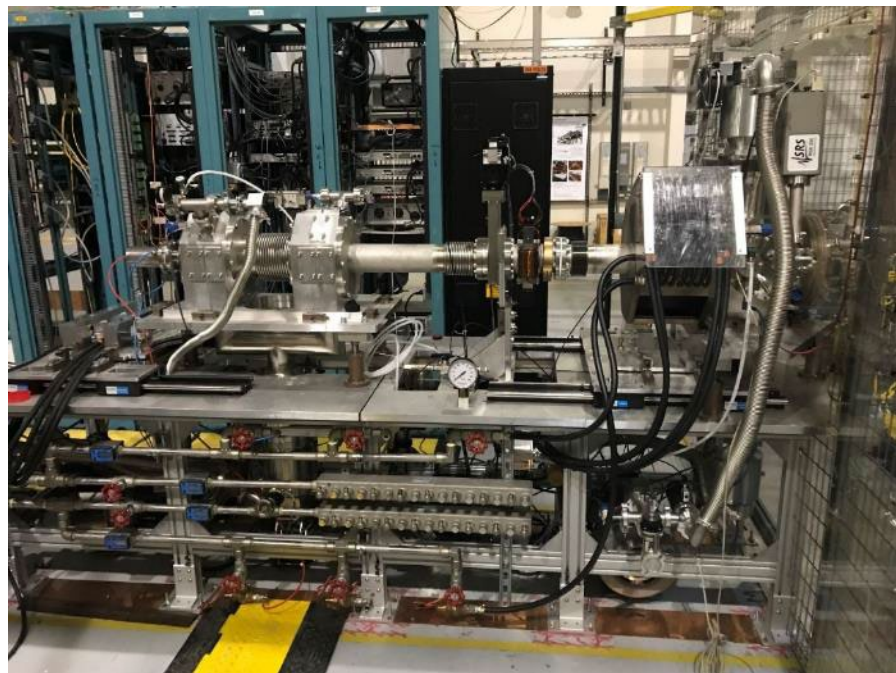
Many of the front-end components are original to the facility and are experiencing significant end of life issues

The purpose of LAMP is to address key critical vulnerabilities in the system that require a large major system project to fix

The project mandate is to keep the present machine capabilities with a modernized and more reliable front end



750 keV RFQ Test Stand (RFQTS) in the LANL Accelerator Development Engineering Facility (ADEF)



H⁺ ion source and Low Energy Beam Transport (LEBT)

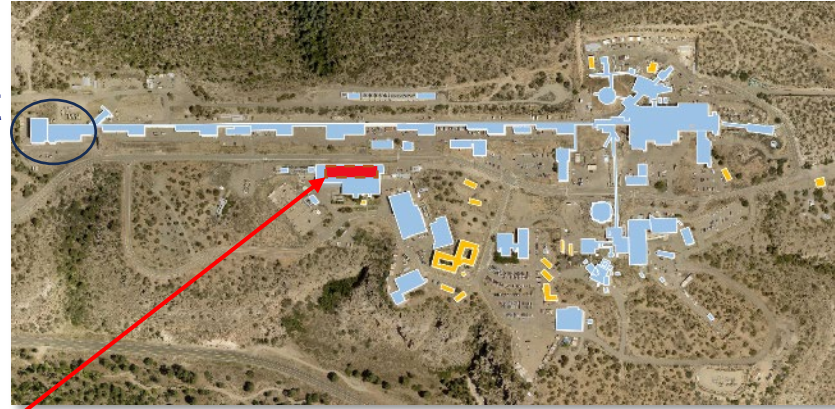


750 keV rod-style RFQ

We plan to pre-commission the new front end in ADEF before the outage



Front
End



Pre-commission in the **Accelerator Development & Engineering Facility (ADEF)** before installation at **LANSCE**

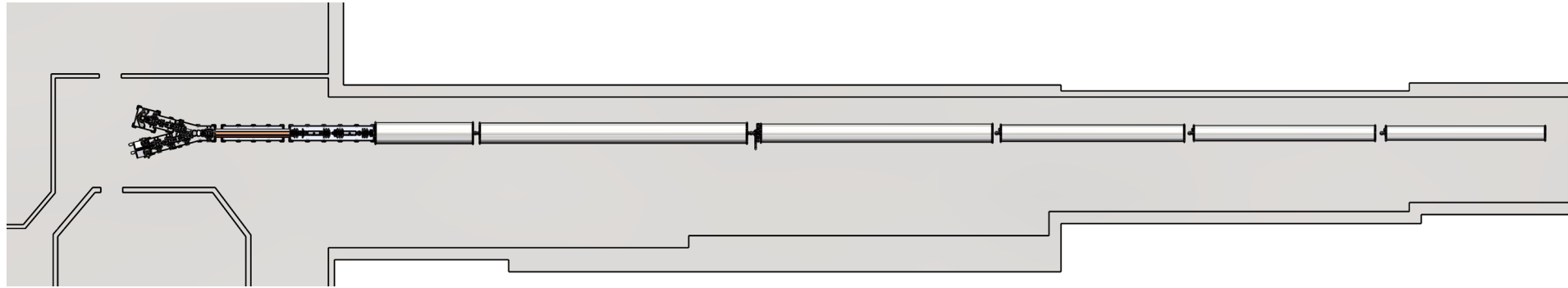


Objectives

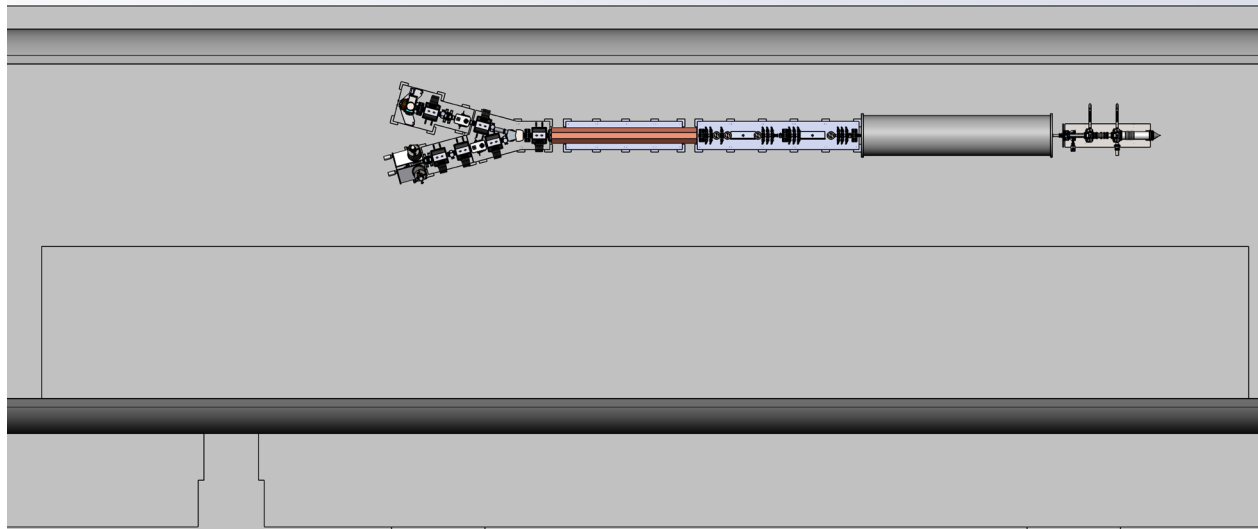
- *Maintain current - and enable future - LANSCE capabilities*
- *Improve reliability, availability, maintainability*
- *Use high-TRL technologies and proven methodologies*

Thank You!

LAMP Layout in LANSCE Tunnel



LAT Layout in ADEF Tunnel



LAMP is moving very quickly to update the front-end of the LANCE accelerator

11/25/2024 CD-0 Approval

1/17/2025 Exemption from the Analysis of Alternatives

10/16/2025 LAMP Conceptual Design Review

[LA-UR-25-31513](#) LANSCE Accelerator Modernization Project Conceptual Design Report

[LA-UR-25-31512](#) LANSCE Accelerator Modernization Project (LAMP) Conceptual Design Review Presentations

1/14/2026 Independent Cost Estimate (ICE) Reconciliation

1/29/2026 Combined Director's Review (DR) and Independent Project Review (IPR)

3/17/2026 Project Management Risk Committee (PMRC)

May 2026 Anticipated CD-1/CD-3X Approval