



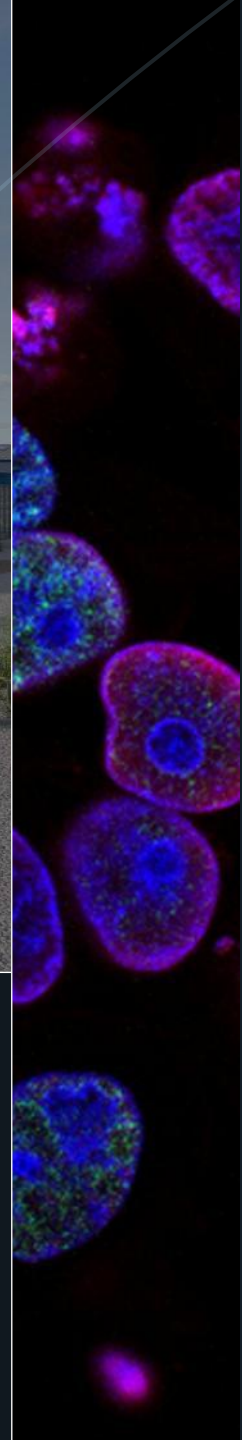
Technology Overview



Ed Parma, Chief Science Officer

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Purpose-Built Production Facility Serves Two Markets Radiodiagnostics and Radiotherapeutics

Eden's mission is to build and operate the world's 1st integrated reactor and hot cell facility dedicated to the commercial production of the US demand for Mo-99/Tc-99m, Lu-177, and other medical radioisotopes for US healthcare system.

Eden's low-power nuclear fission reactor facility and hot cell facility will continuously and concurrently produce both the diagnostic radioisotope **Molybdenum-99** (Mo-99 or Moly), and the therapeutic radioisotope **Lutetium-177** (Lu-177).

The facility will also accommodate production of other isotopes for the medical market, such as Xenon-133 (Xe-133), Iodine-131 (I-131), and other neutron activation produced radioisotopes.

Mo-99/Tc-99m Production Using Fission

Mo-99/Tc-99m is the most important radiodiagnostic isotope use in nuclear medicine.

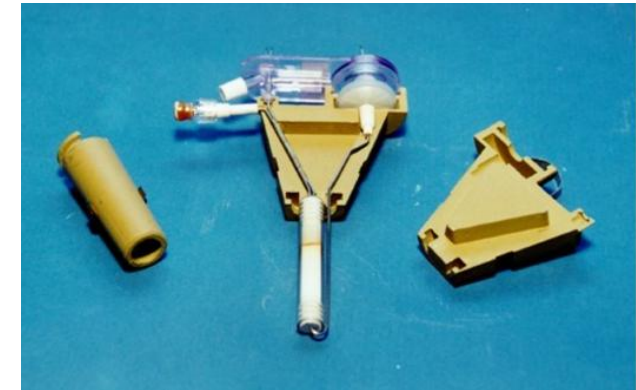
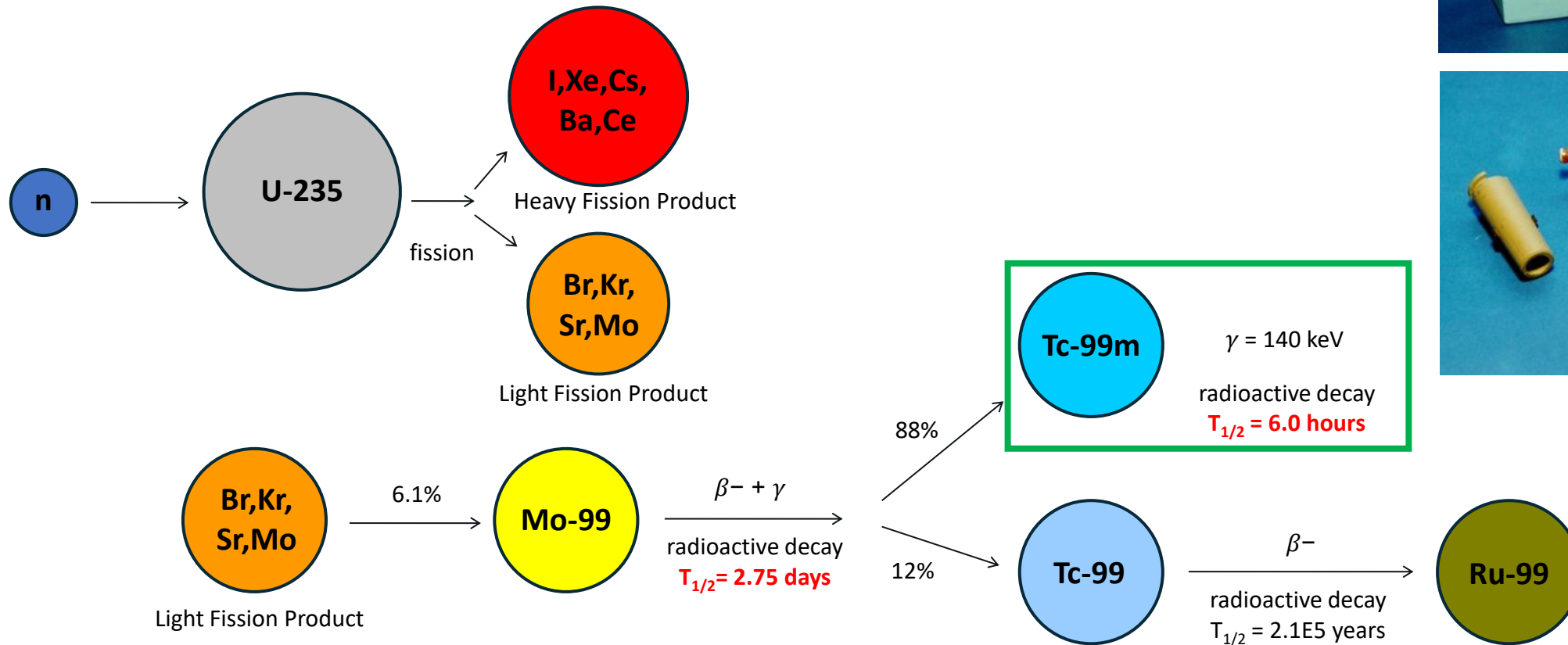
There are ~40,000 procedures per day in the US that use Mo-99/Tc-99m – Organ functionality/blood flow.

Since the early 1990s, there have been supply disruptions and shortages throughout the world.

The US is in a worse state than in the 1990s, there is no north American producer of fission Mo-99!

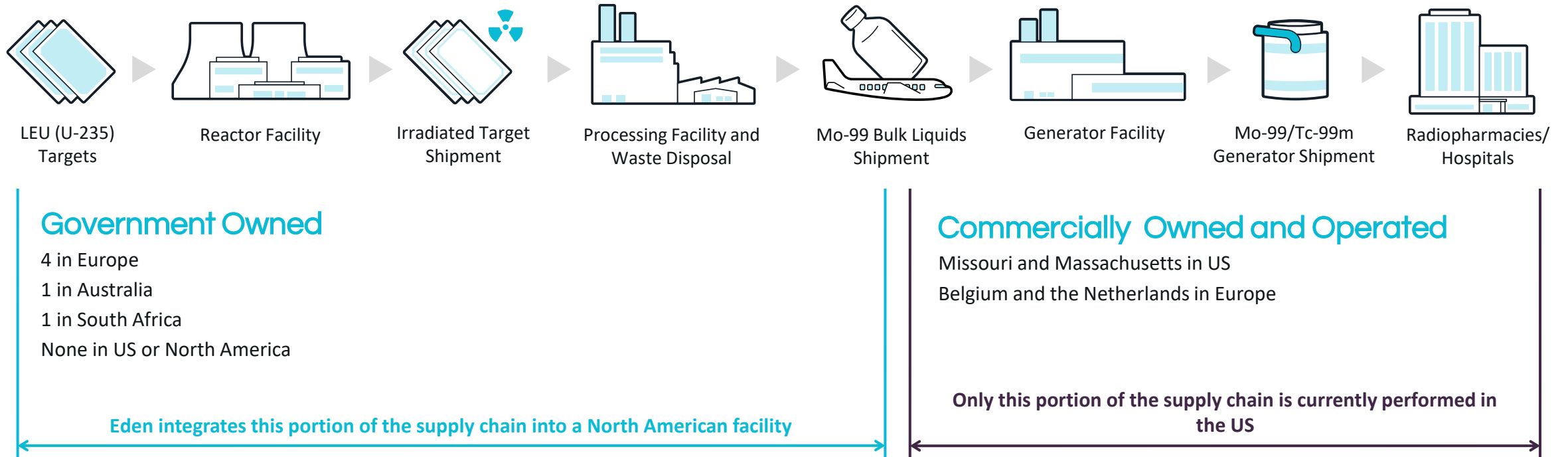
Usage is growing at 5-10% per year.

Although Mo-99 can be made by neutron activation of Mo-98, or other exotic accelerator techniques (e, γ, n reactions on Mo-100), the world's supply is currently made by fission of U-235 - "fission moly." Fission moly allows for a high production quantity and a high specific activity.



Worldwide Mo-99/Tc-99m Supply Chain

Established supply chain meeting global Mo-99 requirements



The American Medical Isotope Production Act of 2012 was passed to encourage US commercial vendors resolve this issue; however (to-date) no domestic company has succeeded in becoming a US supplier.

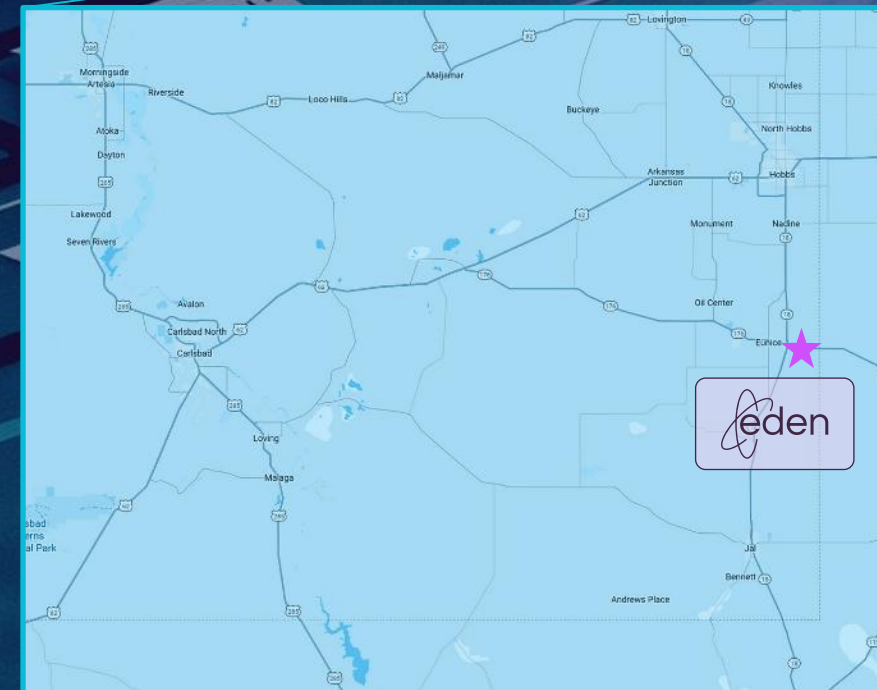
All of the Mo-99 produced in the world today is made using government owned and operated reactors, none of which are in the U.S. or North America.

There are currently no commercially owned reactors providing Mo-99.

Facility Location Overview

Strategically located in a “nuclear-friendly” region of New Mexico proximal to other nuclear-related companies and an educated workforce, the Eden Isotope Production Complex plans include multiple buildings in an integrated complex.

- **Eden-owned 240-acre site in near Eunice, NM (Lea County) purchased in 2020.**
- **Close to WCS (Waste Control Specialists) site, a secure option for radioactive waste disposal**



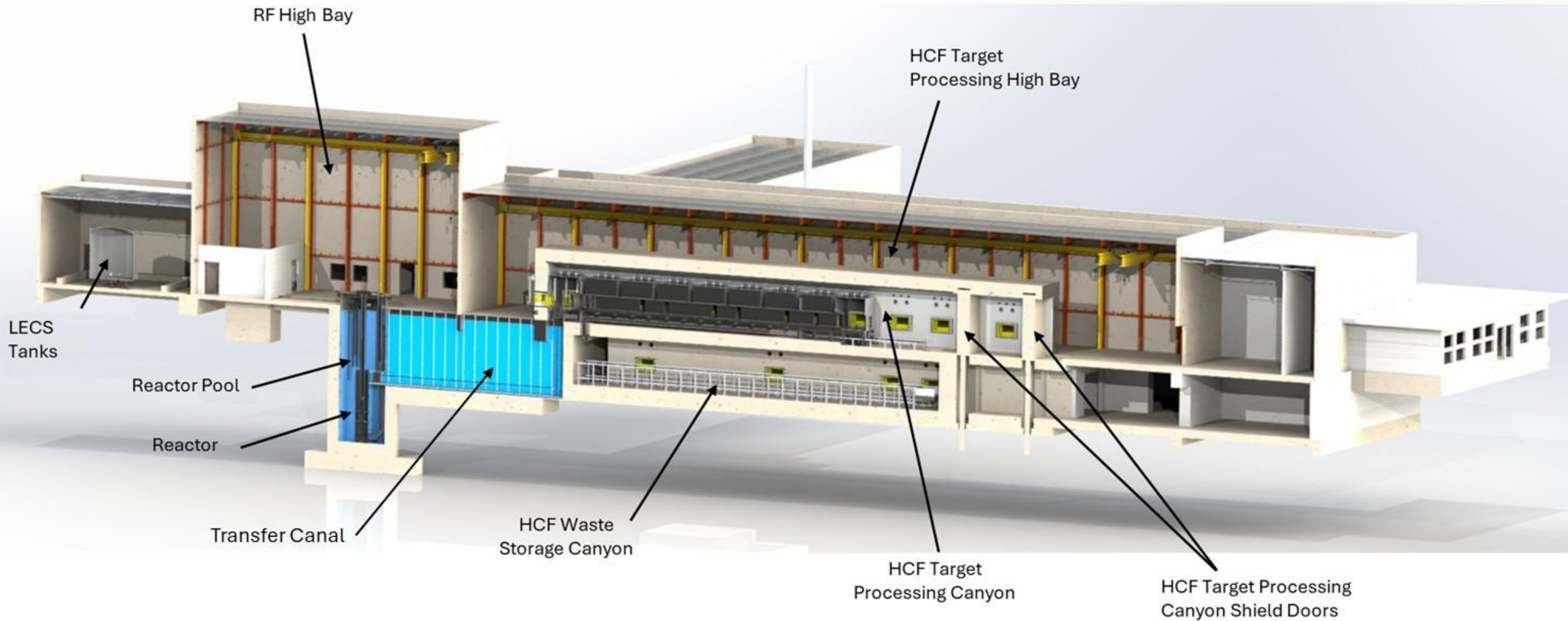
Eden New Mexico Facility Site Location



Eden Medical Isotope Facility (EMIF)

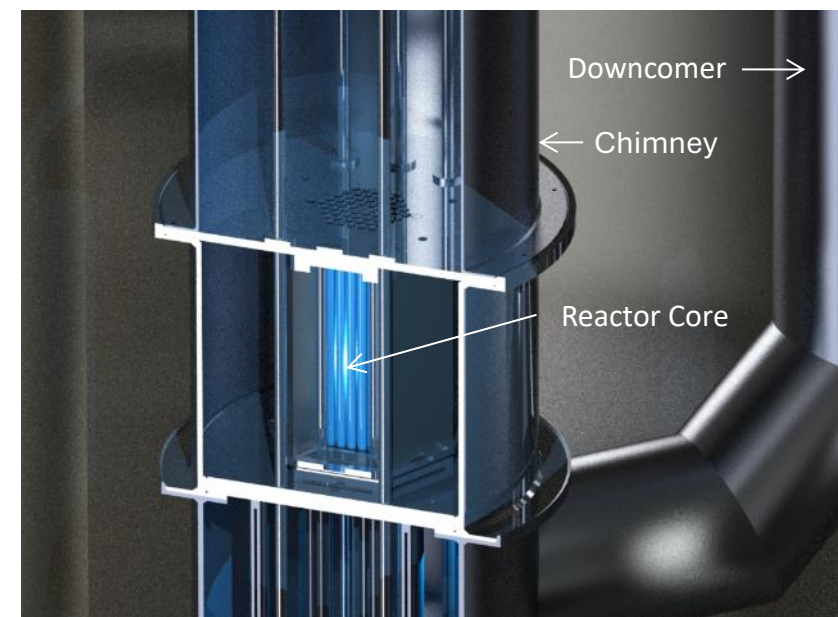
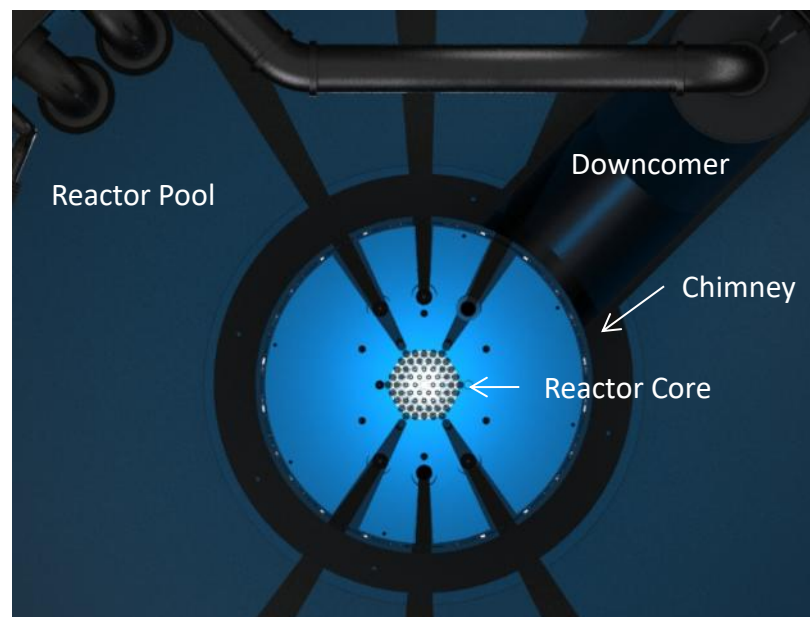
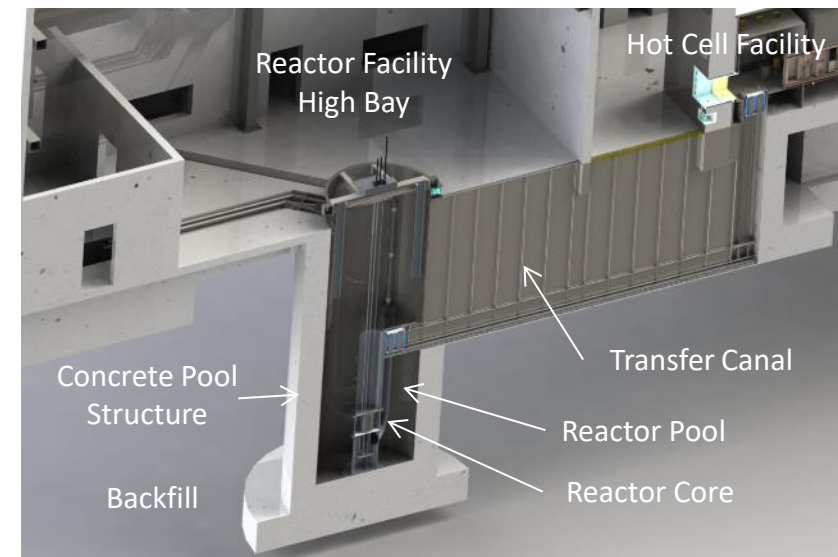
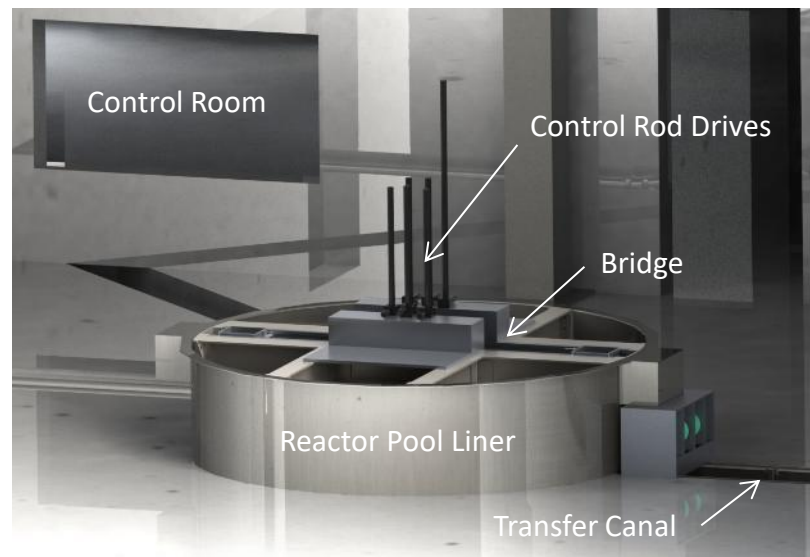
World's first integrated reactor and hot cell facility for the dedicated commercial production of medical radioisotopes.

- The reactor facility runs 24/7 and can produce fission isotopes concurrently and continuously.
- The hot cell facility target processing canyon can produce the US demand for Mo-99.



Our reactor is called the All-Target Reactor because all of the uranium targets are used to produce Mo-99.

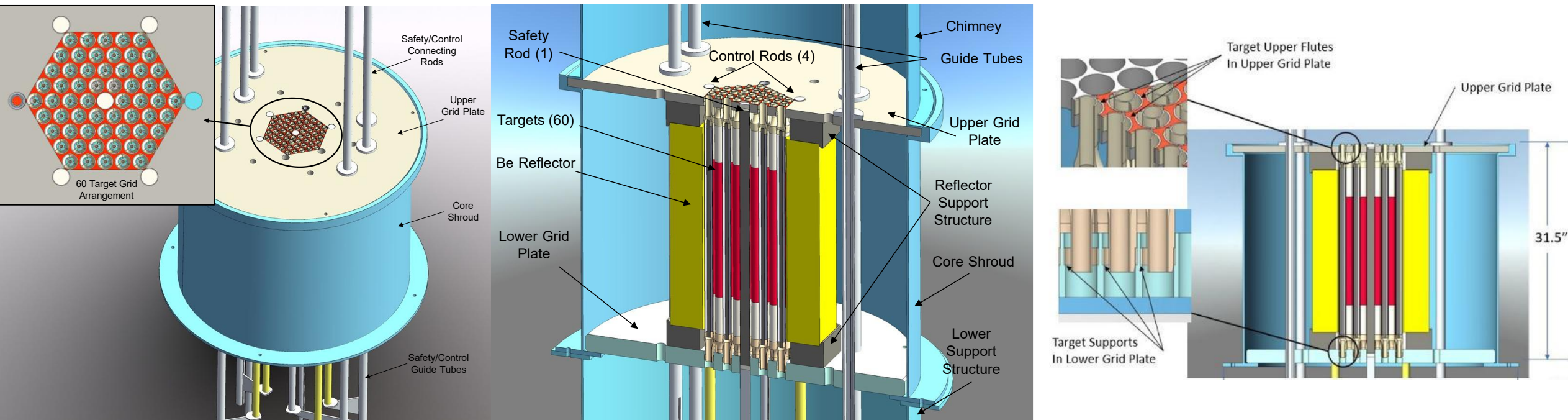
- Since all of the targets are used for Mo-99 production there is no spent fuel generated.
- The targets use 19.75% enriched LEU.
- The reactor operates at a steady-state power level of 1.8 MW in a large open pool.
- The reactor core uses natural circulation to cool the targets.
- The reactor core has a large thermal neutron flux allowing for high output of neutron activation produced isotopes in the six activation locations.
- The reactor runs 24 hours per day and 7 days per week with only short down times a few times a week to allow for target changeout
- The transfer canal allows for irradiated targets to be moved in a timely fashion to the hot cell facility for processing.



All Target Reactor Core

The All-Target Reactor is optimized to allow for high Mo-99 production output with as small of a fuel loading as possible and a large thermal neutron flux in the six activation locations.

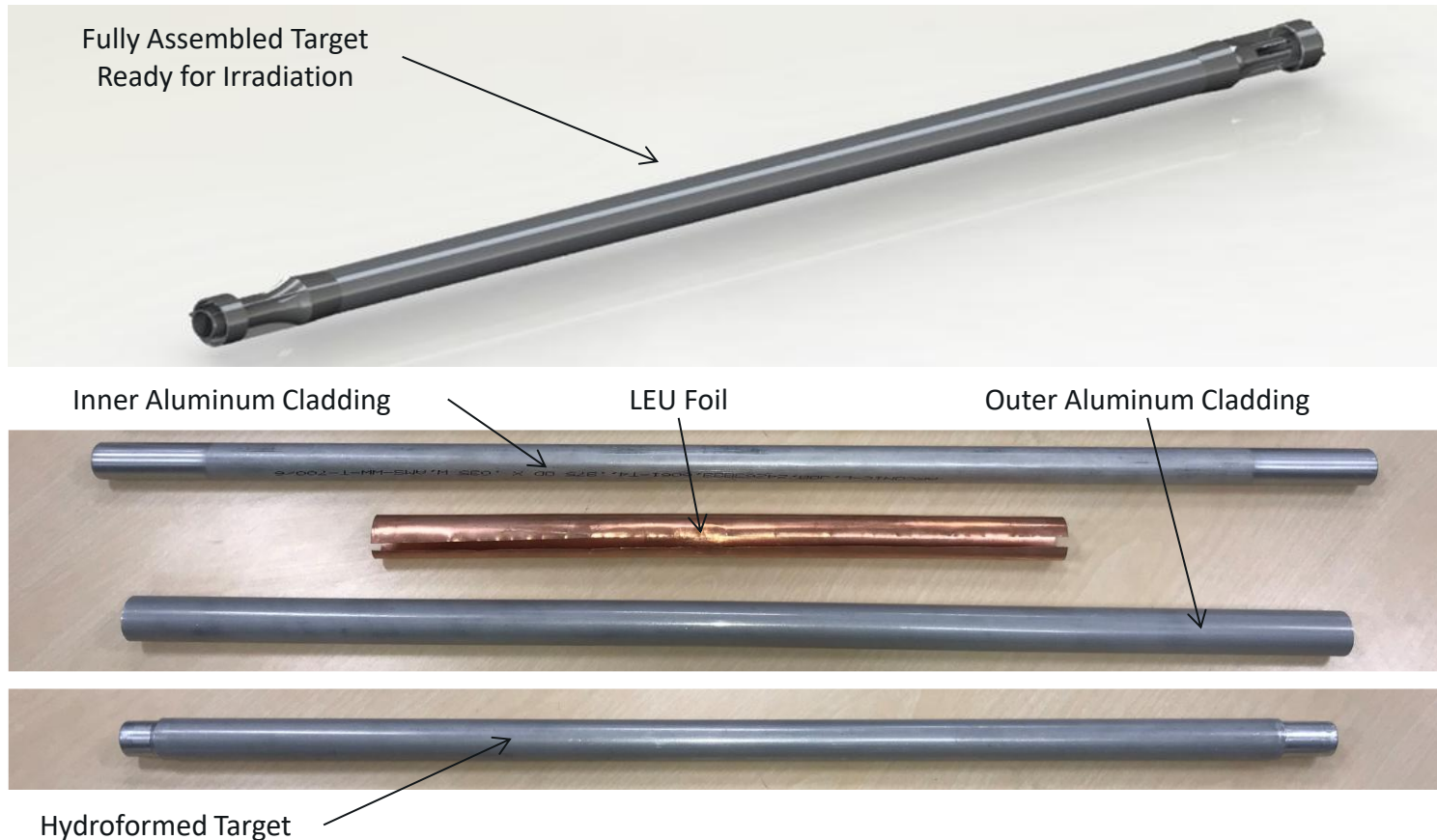
- The reactor core has 60 targets as the fuel and is surrounded by a beryllium reflector to optimize the neutronic conditions.
- The reactor is operated in a steady-state mode in a using a simple control methodology similar to TRIGA-type university reactors.
- The relatively low power level of 1.8 MW produces a limited amount of fission products, minimizing the material a risk in the event of an accident whereby fission products are released into the pool.



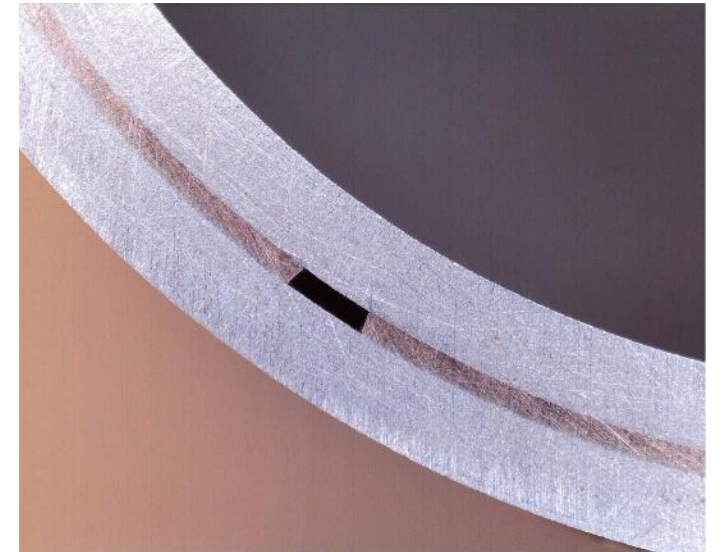
Target Design

The Target Design uses low-enriched uranium (LEU) metal foil as the fuel with aluminum cladding.

- The LEU fuel is 19.75% enriched in U-235 that allows it to remain proliferation tolerant.
- The target design is very simple, composed of only three parts: the inner cladding; the LEU metal foil; and the outer cladding.
- The components are hydroformed to form a target that maintains superior heat transfer characteristics.



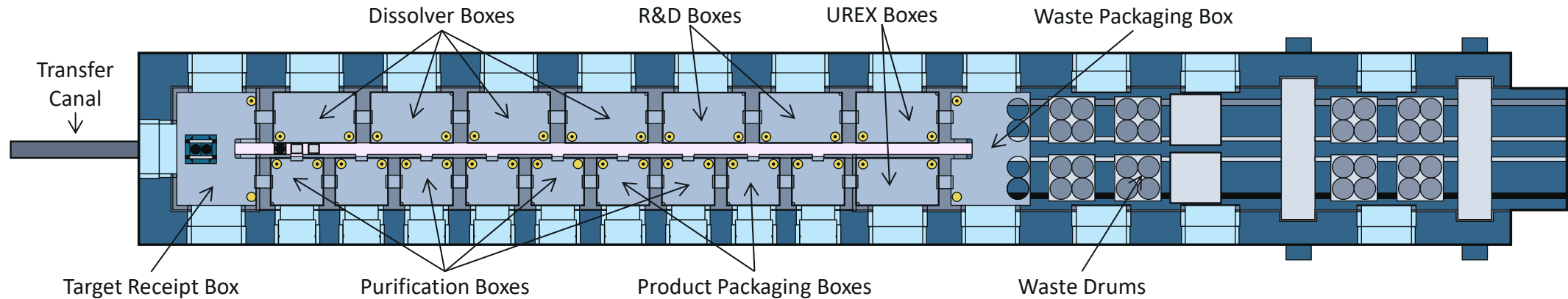
Radial Section Cut of a
Hydroformed Target



Hot Cell Facility Target Processing Canyon

The Hot Cell Facility Target Processing Canyon is designed to produce the US demand for Mo-99.

- The target processing canyon is comprised of a series of redundant steel confinement boxes.
- The boxes efficiently support different stages of the modified Cintichem process.



Questions?



Ed Parma, CSO

eparma@edenrad.com

9400 Holly Ave NE

Suite 202

Albuquerque, NM 87122