



OFFICE OF  
RESEARCH SAFETY

# Radiation Safety Program Overview

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Department of Environmental Safety, Sustainability & Risk  
SSEB RMTC Meeting June 11, 2019



# Radiation Protection Program Scope

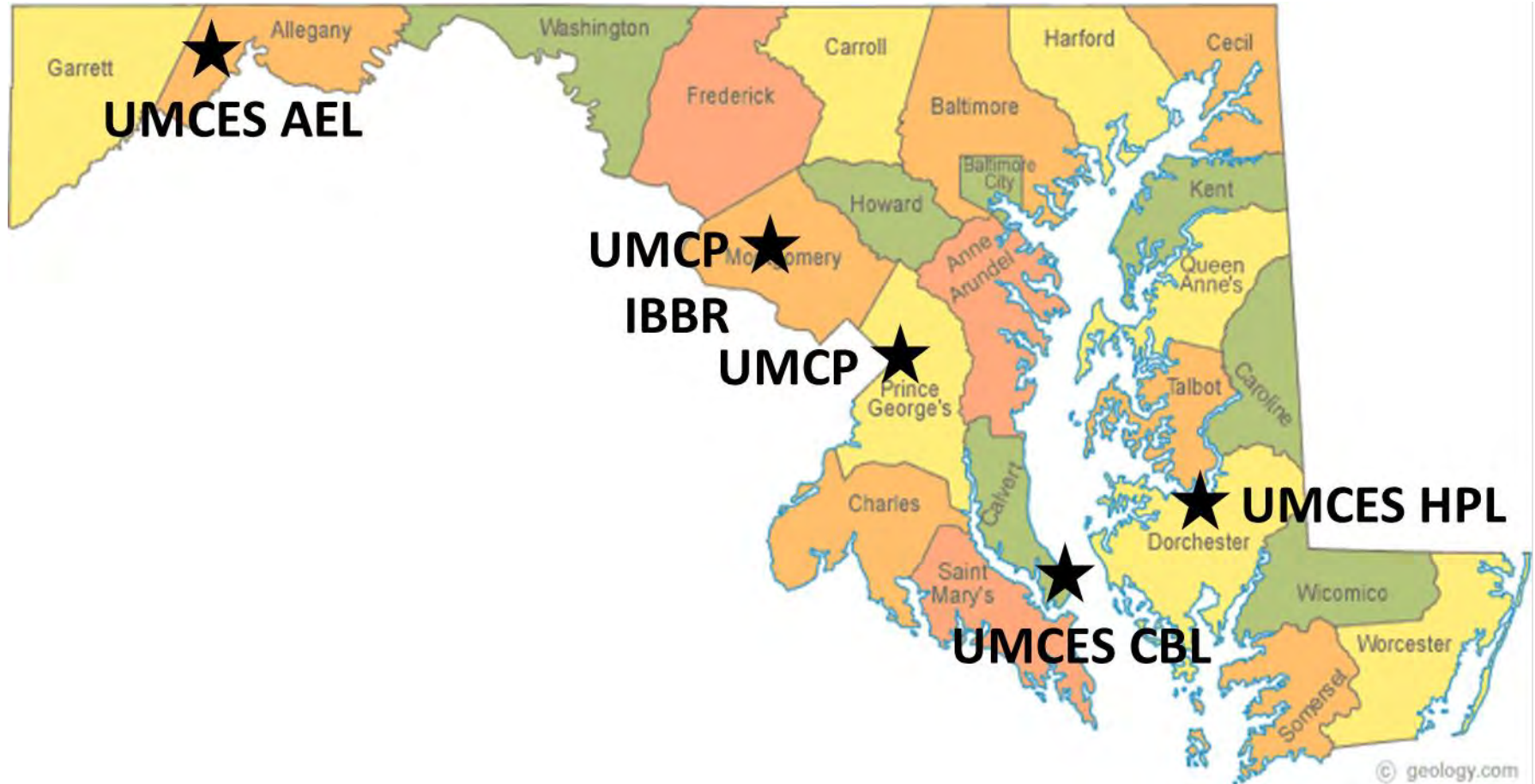
- Maryland: Agreement State
- Regulator: Maryland Department of the Environment (MDE)
- University has 3 Licenses with the State of Maryland
  1. Broadscope Materials License MD-33-004-01
    - Radioactive material use in research (C-14, H-3, P-32, I-125, Fe-55 Uranium-238, Thorium-232, Ni-63 GC/ECD, Various Sealed Sources)
  2. Special Nuclear Materials License MD-33-004-02
    - 2 Plutonium-239/Beryllium Sources at Maryland University Training Reactor (MUTR)
  3. Irradiator License MD-33-004-03
    - Panoramic Co-60 Irradiator (underwater storage of sealed sources)
- Radiation Producing Machines
  - ~33 Registered machines with MDE
- MUTR
  - NRC Licensed to Engineering
  - UMD Radiation Safety Staff Support MUTR
    - Health Physics Program, License Support
    - NRC Inspection of Health Physics Program Every 2 years





# Licensed Facilities Under UMD Control

MD-33-004-01 Locations Of Use (College Park, IBBR Rockville & 3 UMCES Locations)









2017 MRIS

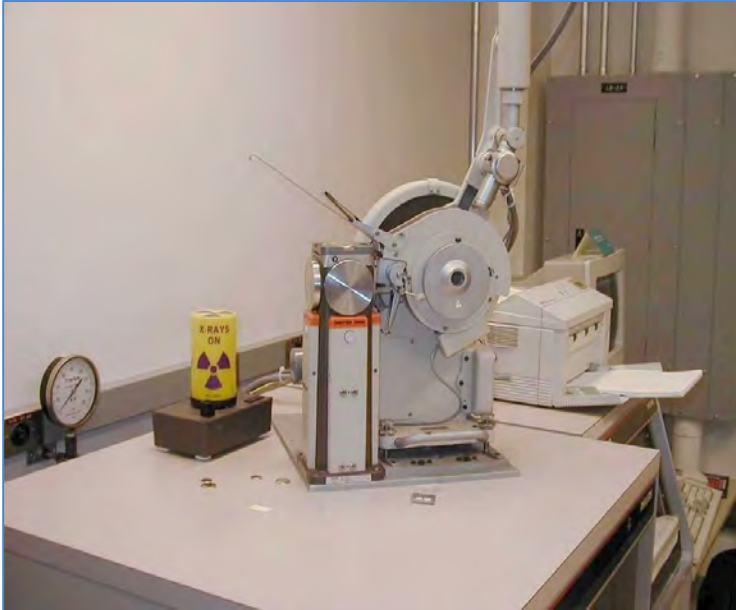
# Radioactive Material Use



- ~35 Principle Investigators
  - CBMG, Chemistry, Vet Med, Physics, IBBR, UMCES, Animal Science, Plant Science/Landscape Architecture
- ~100 Authorized Labs
- RSO Quarterly Lab Audits
  - Compliance Good
  - Violation Policy Est. 2009
- ~120 Packages Received Annually
- ~60 Individuals Trained Annually
- Dosimetry & Environmental Monitoring (process 2500 badges/year)
- Perform Survey Meter Calibrations
- Sealed Source Inventory & Leak Tests (semi-annual)
- ALL Research protocols reviewed by RSO and Approved by RSC
- Track & Oversee Radioactive Material from Receipt to Disposal



# Radiation Producing Devices



- Manage 33 Machine X-ray Units
  - Research, Enclosed/Cabinet Types, Medical, Human Use/Diagnostic, Linear Accelerator
- Conduct Annual Surveys & Audits
- One Staff Health Physicist is a State Certified Inspector
  - Conduct State Inspections
  - Medical Physicist, Contractor, State Licensed Inspector (Health Center & Athletics)
  - Train 80 X-ray users each year



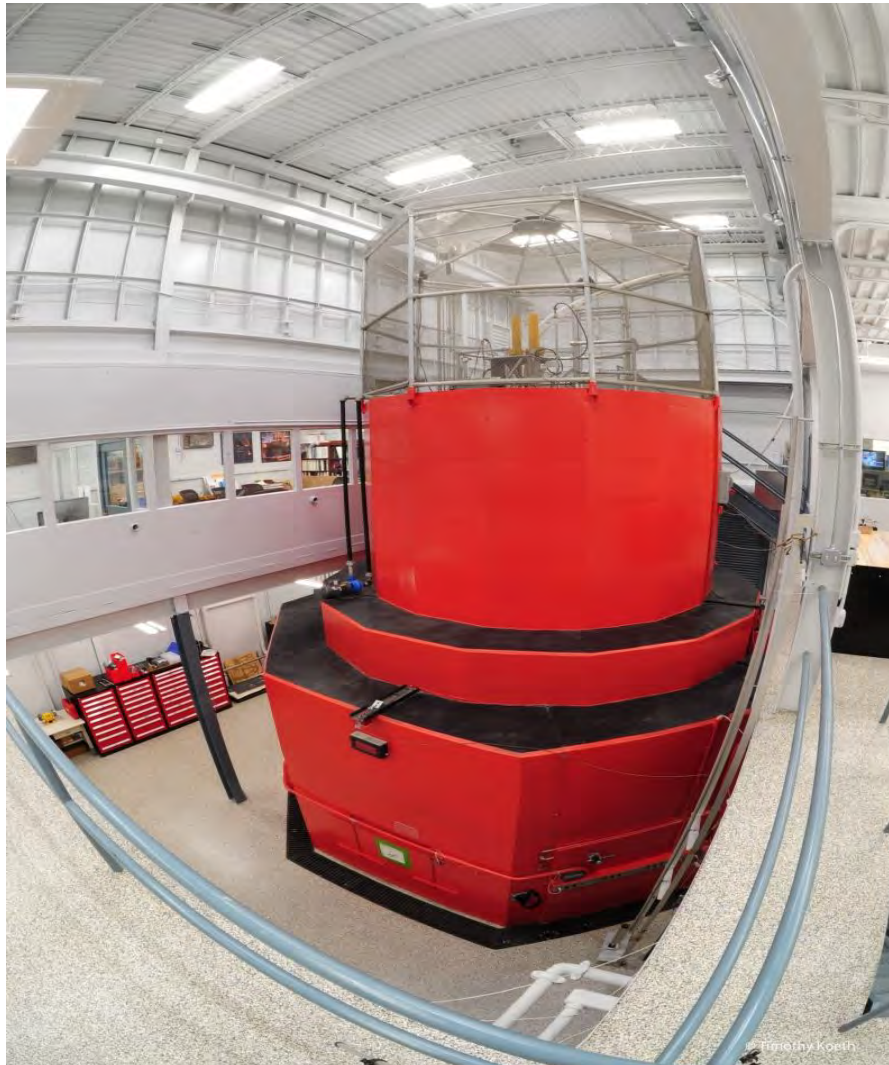
# Maryland University Training Reactor



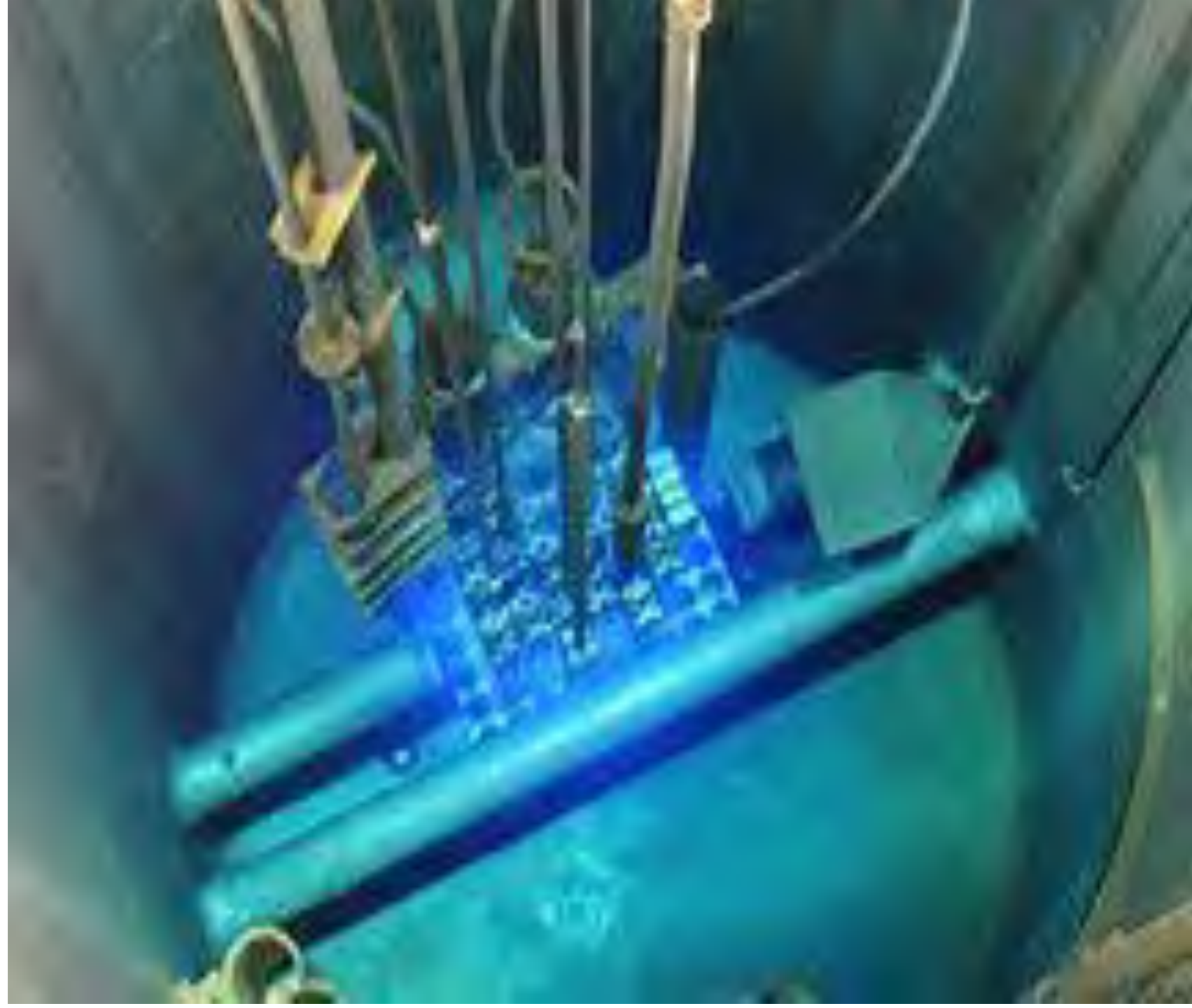
- Support Reactor Director
- RSO on Reactor Safety Committee, Director on campus RSC
- Health Physics Program Implementation
- Reactor Air & Water Monthly Surveillances
- Surveys & Occupational and Public Dose Assessments
- Review Protocols
- Support Re-Licensing HP questions
- Dosimetry & Area Monitoring
- Meter Calibrations



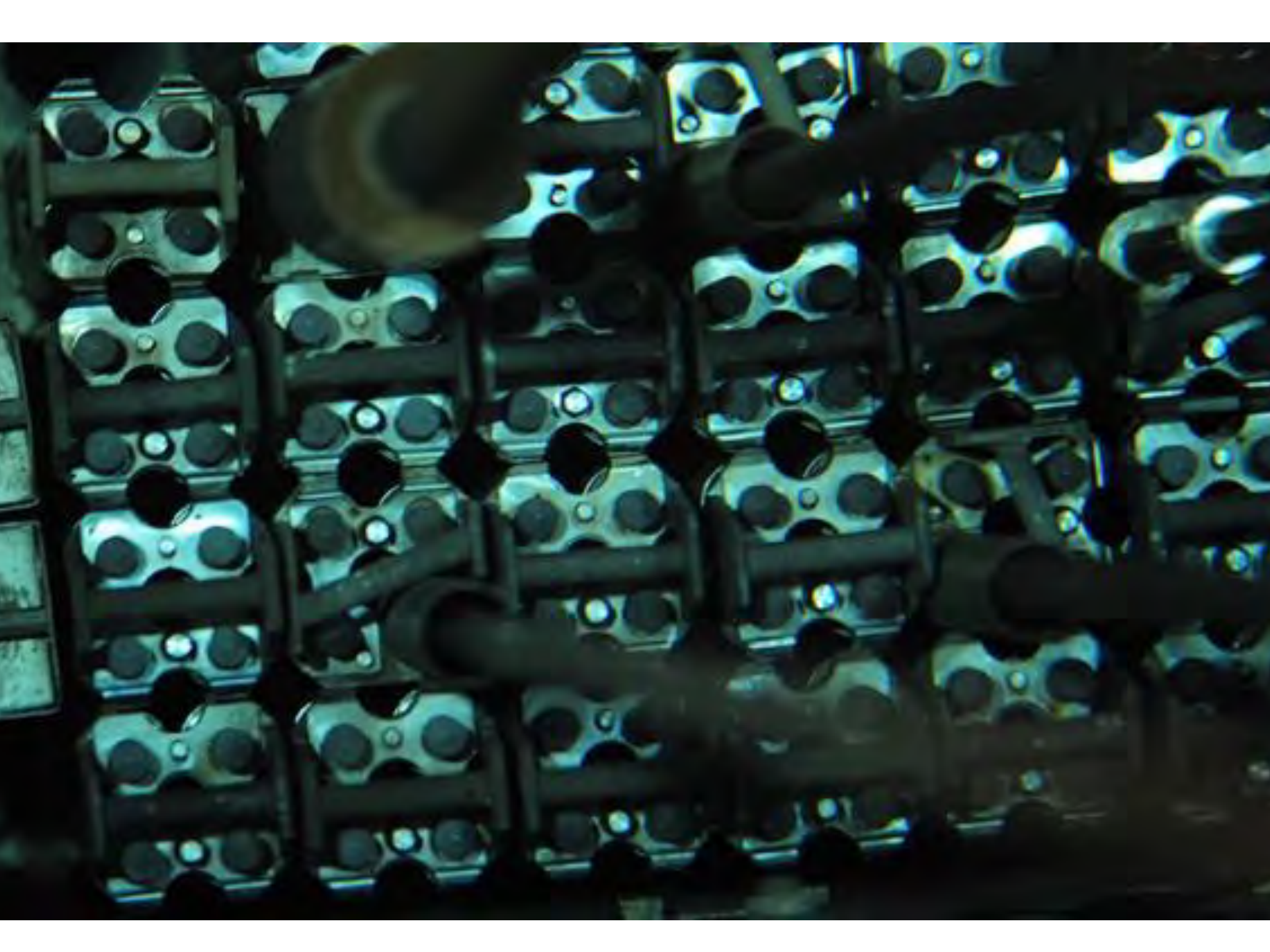
# UMD Training Reactor

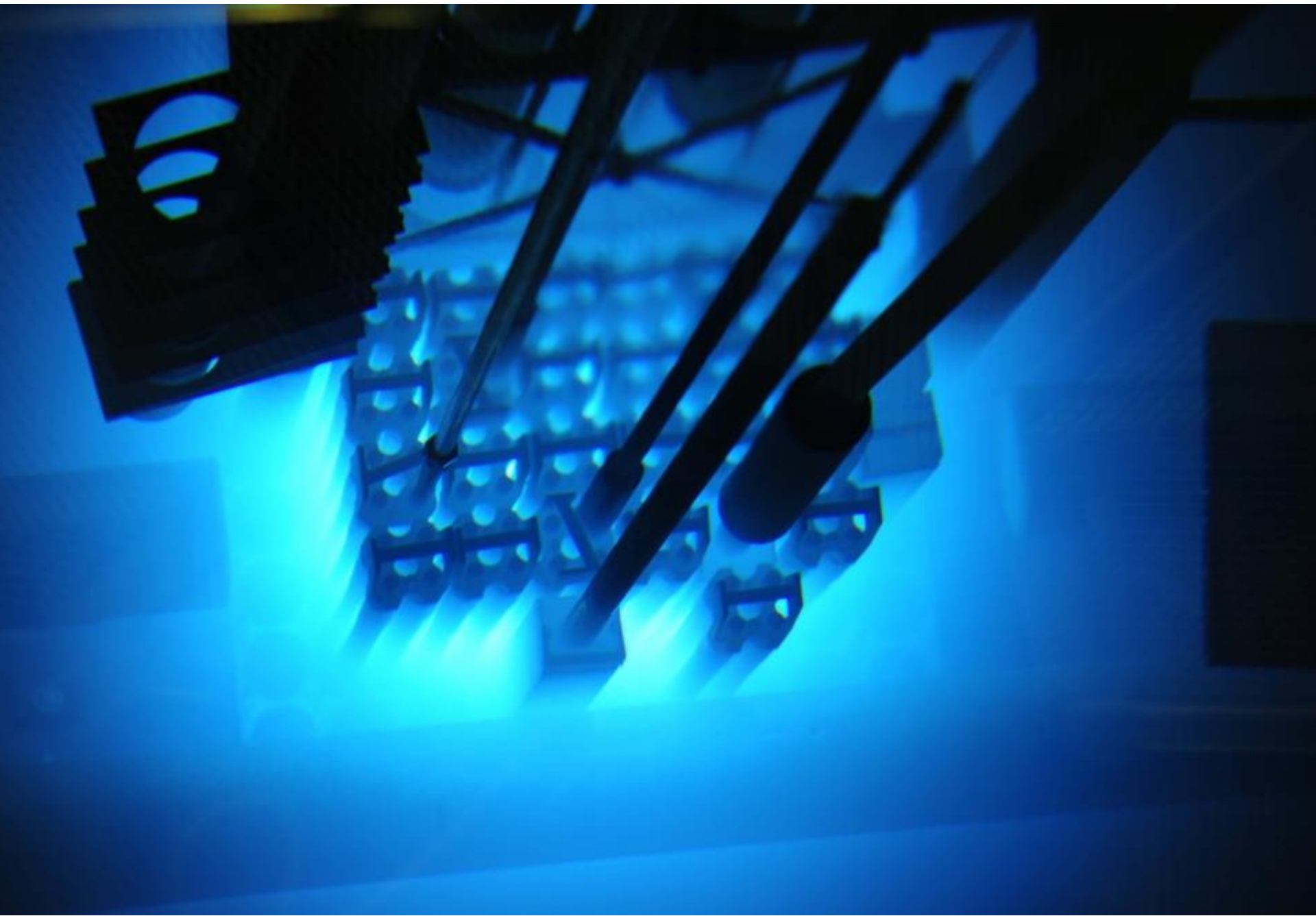


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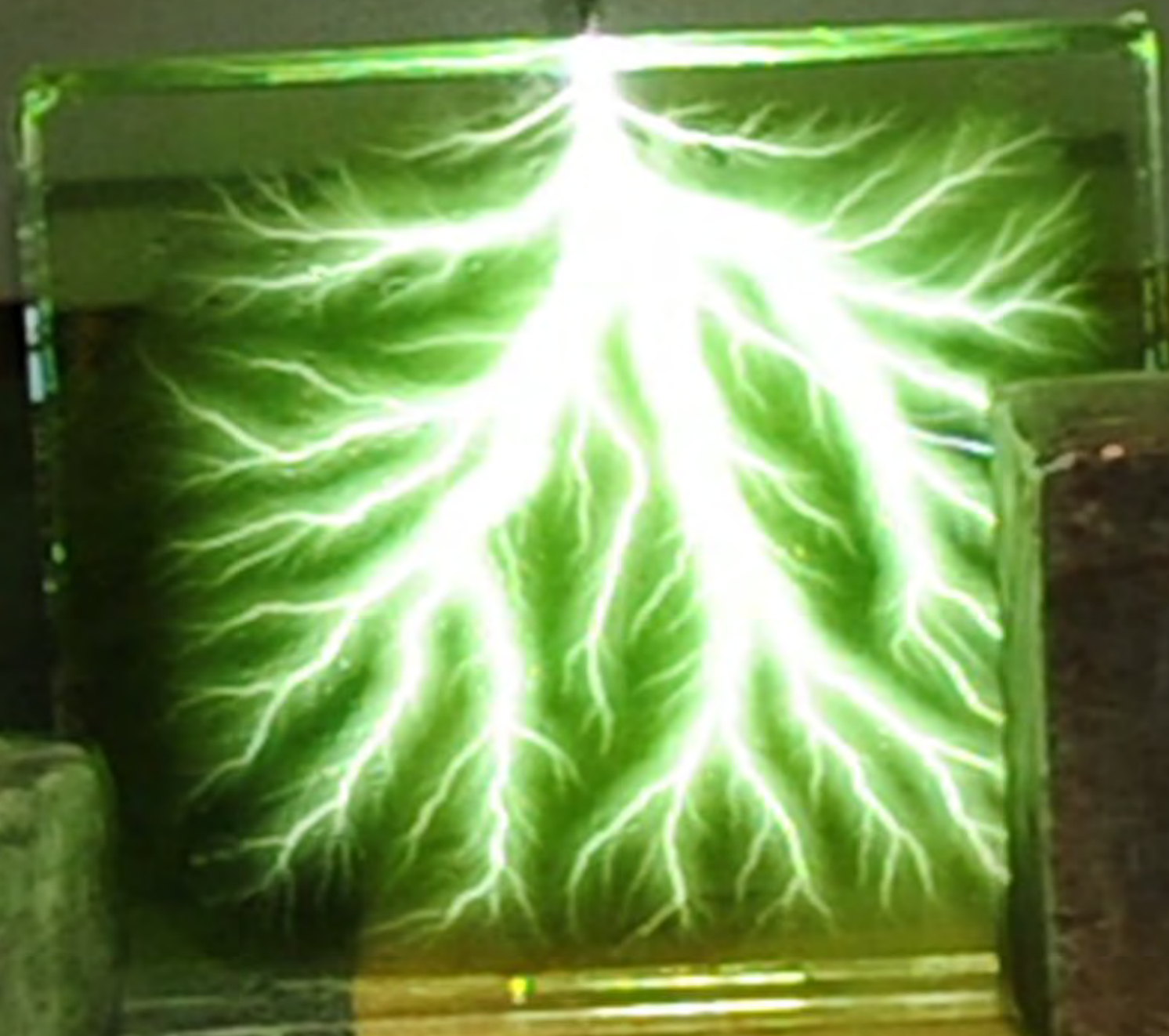














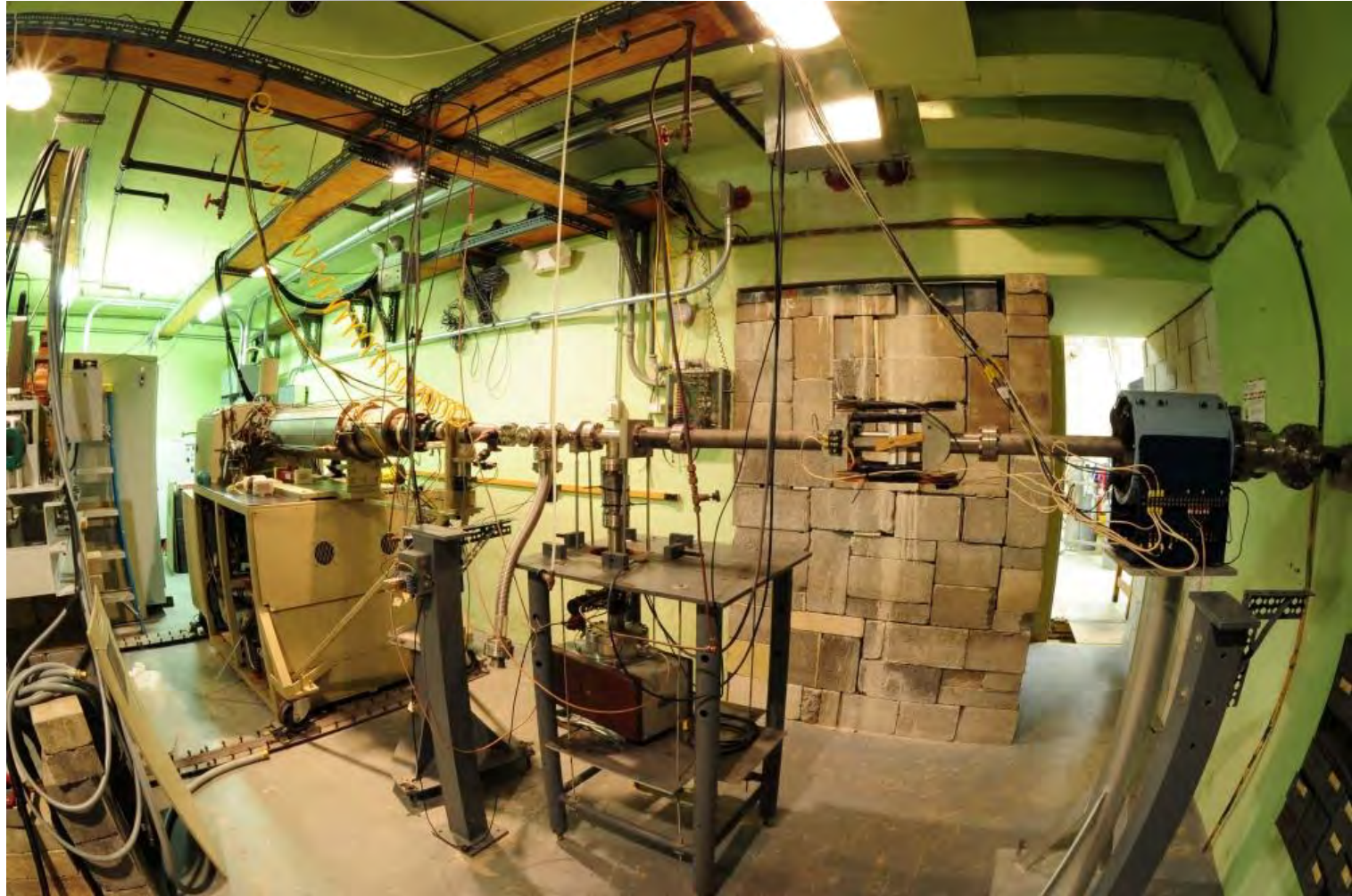


# Gamma Irradiator

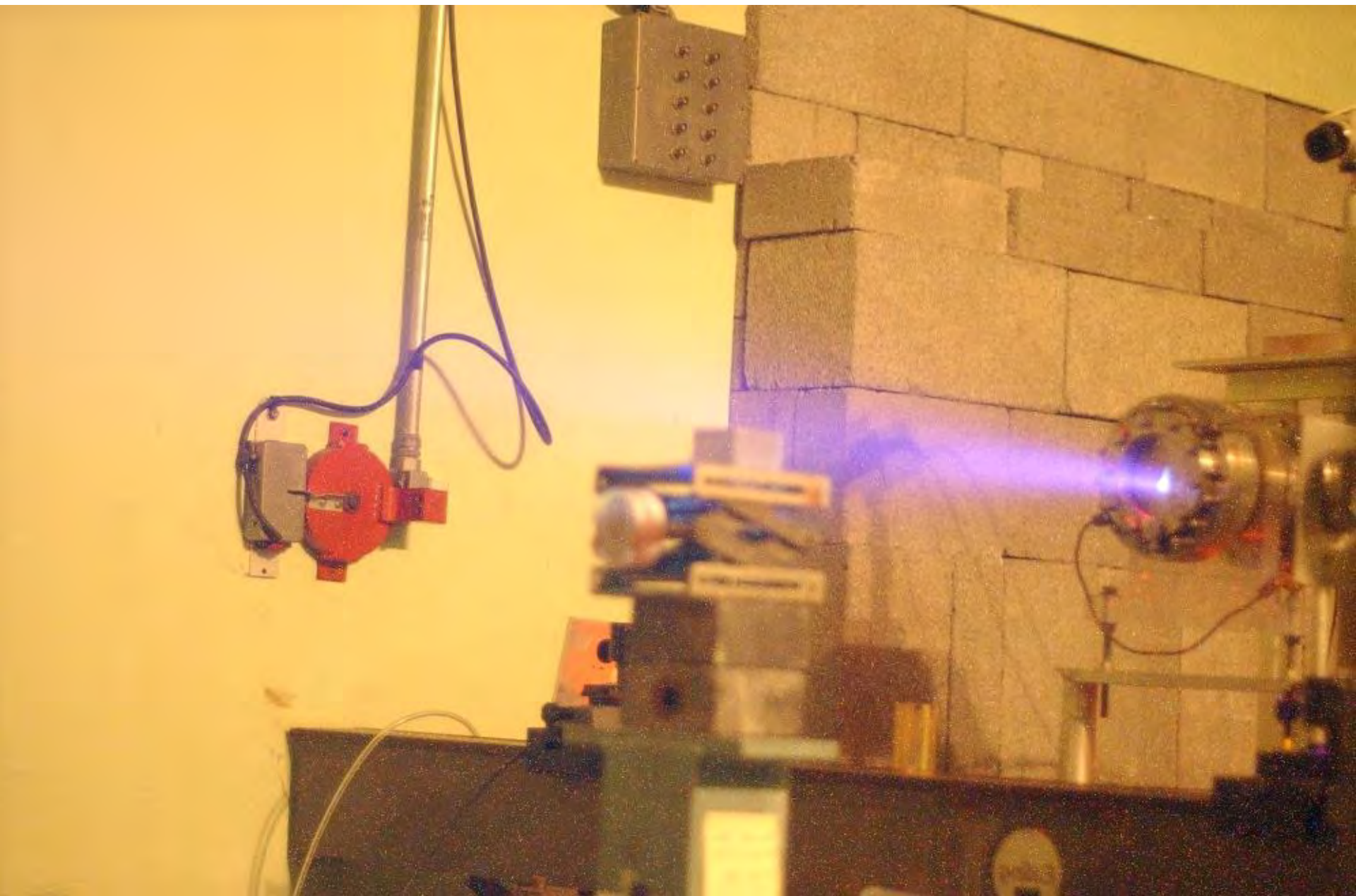


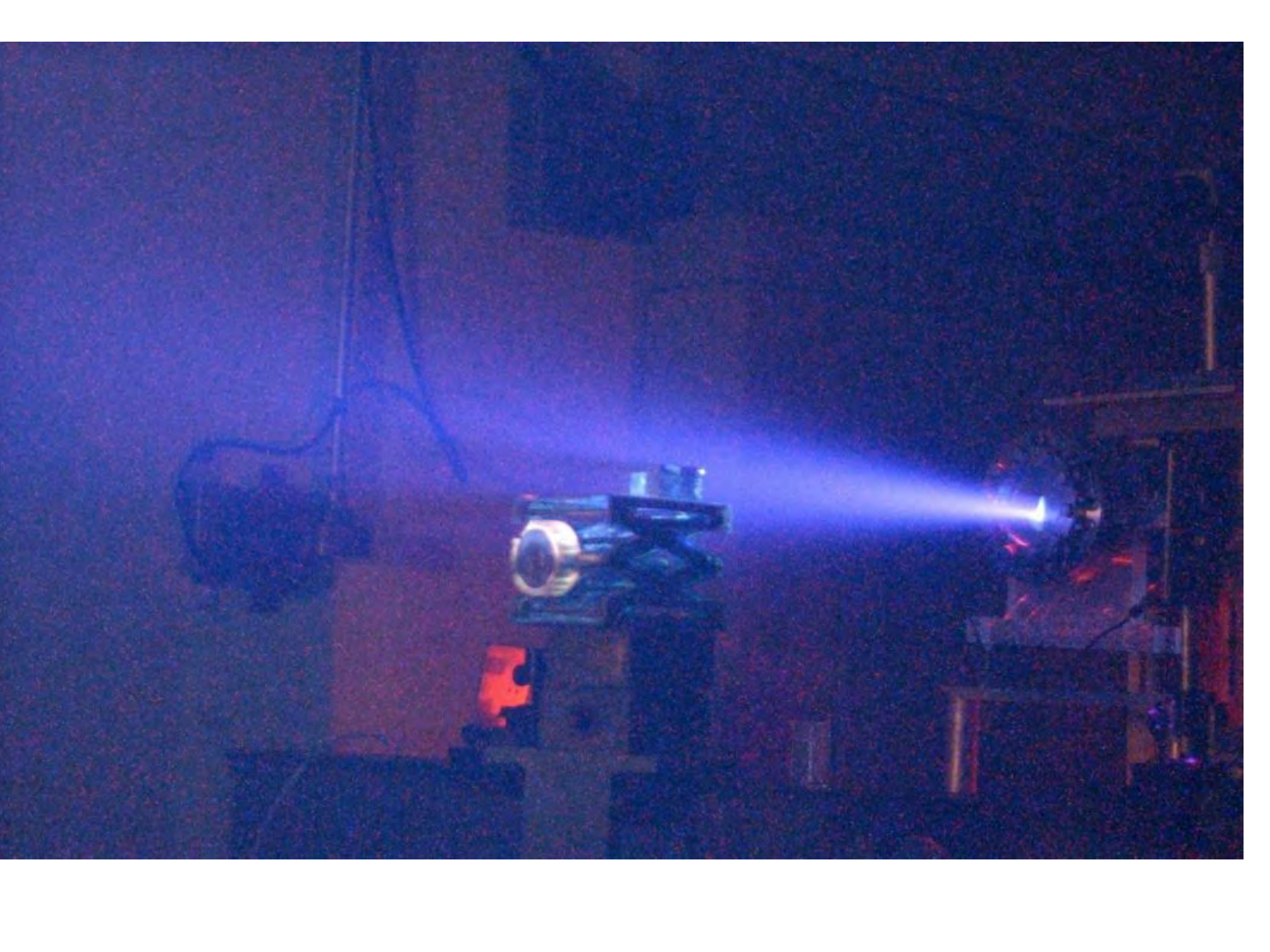


# Linear Accelerator





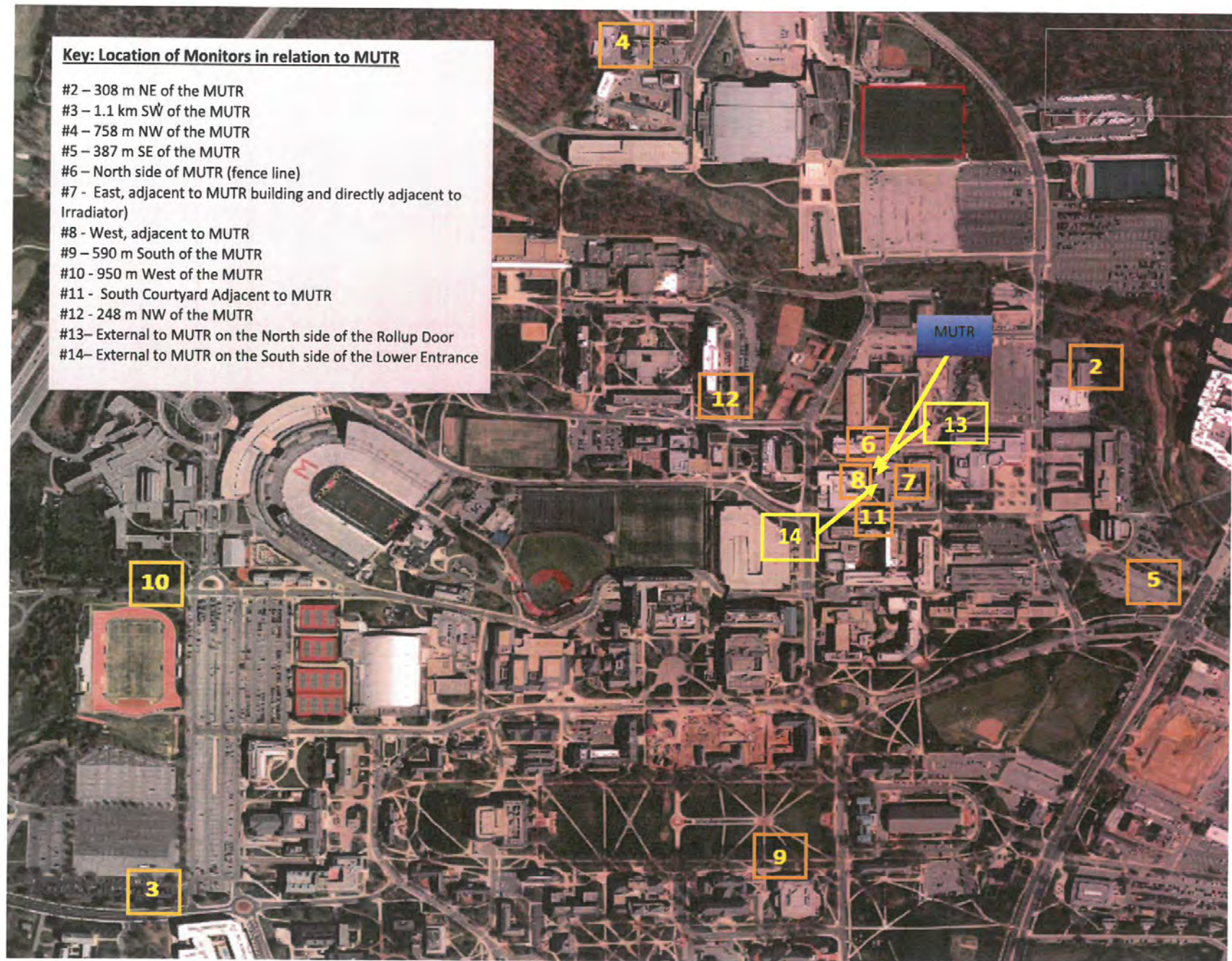






**Key: Location of Monitors in relation to MUTR**

- #2 – 308 m NE of the MUTR
- #3 – 1.1 km SW of the MUTR
- #4 – 758 m NW of the MUTR
- #5 – 387 m SE of the MUTR
- #6 – North side of MUTR (fence line)
- #7 – East, adjacent to MUTR building and directly adjacent to Irradiator)
- #8 – West, adjacent to MUTR
- #9 – 590 m South of the MUTR
- #10 – 950 m West of the MUTR
- #11 – South Courtyard Adjacent to MUTR
- #12 – 248 m NW of the MUTR
- #13 – External to MUTR on the North side of the Rollup Door
- #14 – External to MUTR on the South side of the Lower Entrance





# The Koeth Collection











Model 26-1

LUDLUM MEASUREMENTS INC

455  
K-20m

SN: PF005051







RADIUM ORE  
REVIGATOR  
PATD. 7-10-12  
TRADE MARK

THE  
RADIUM ORE REVIGATOR CO.  
REVIGATOR BUILDING  
SAN FRANCISCO, CAL.

USE EVERY NIGHT  
STIR PART OR ANY  
MATTER  
FREELY WHEN  
AND UPON  
AND RETIRING  
OR MORE  
ONLY  
WITH STIFF BRUSH  
MONTHLY.



















# Maryland Fire and Rescue Institute

## College Park, Maryland



U.S. Department of Energy  
Transportation Emergency Preparedness Program  
Radiation Specialist Course  
April 29-May 3, 2019































































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