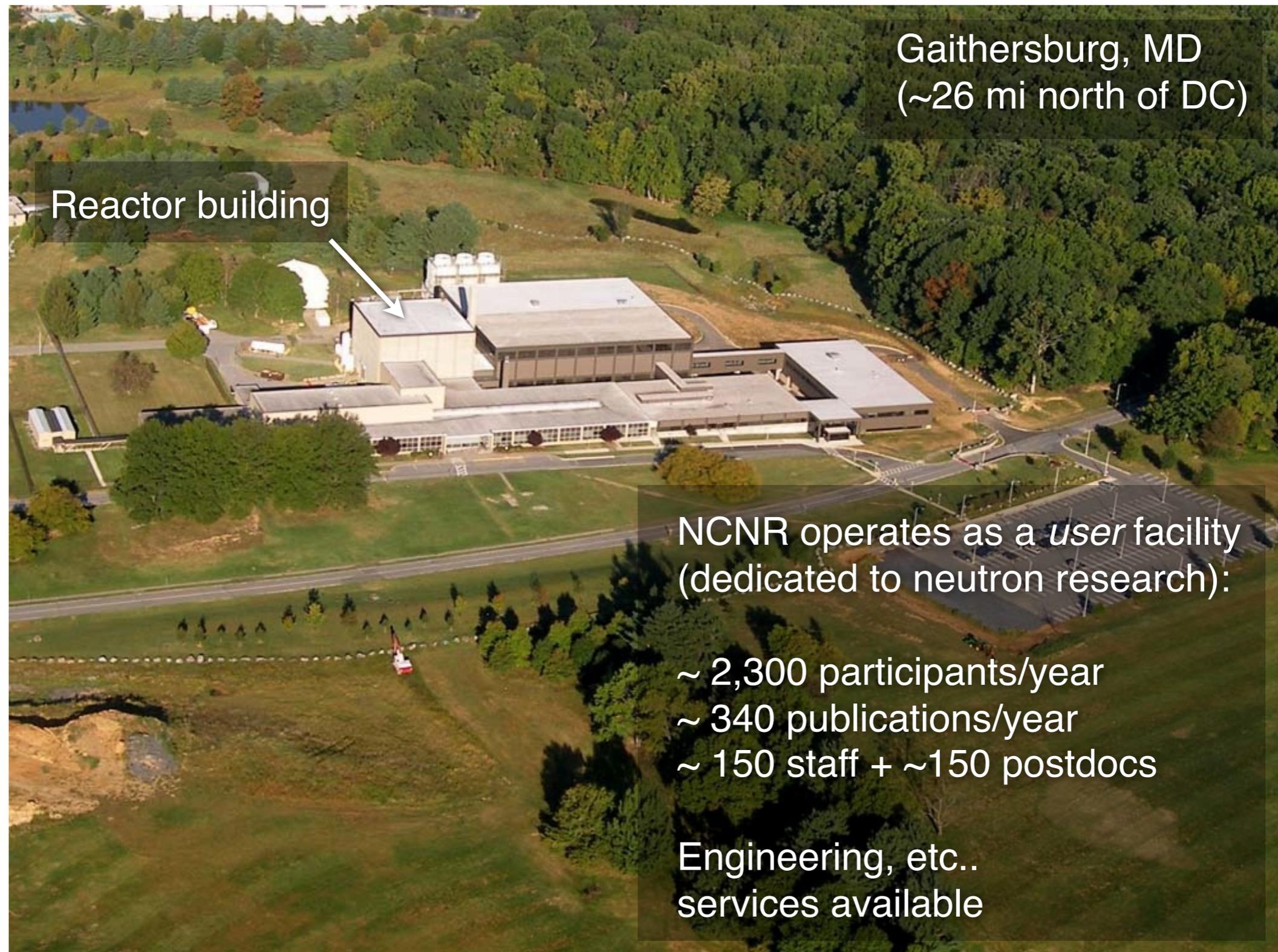


H.P. Mumm

National Institute of Standards and Technology



NIST Center for Neutron Research (NCNR)



Gaithersburg, MD
(~26 mi north of DC)

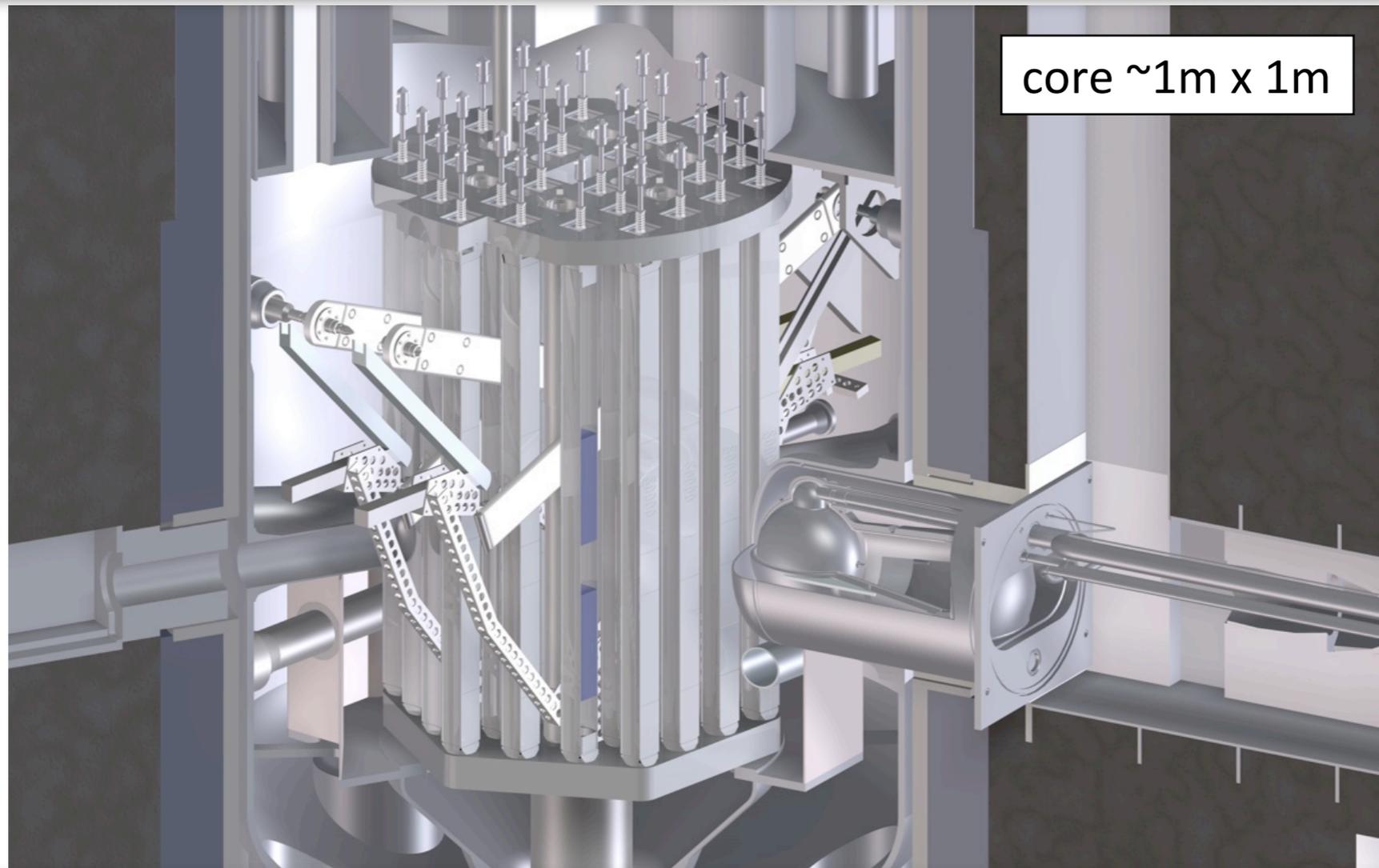
Reactor building

NCNR operates as a *user* facility
(dedicated to neutron research):

- ~ 2,300 participants/year
- ~ 340 publications/year
- ~ 150 staff + ~150 postdocs

Engineering, etc..
services available

NBSR: Split core reactor dedicated to neutron research



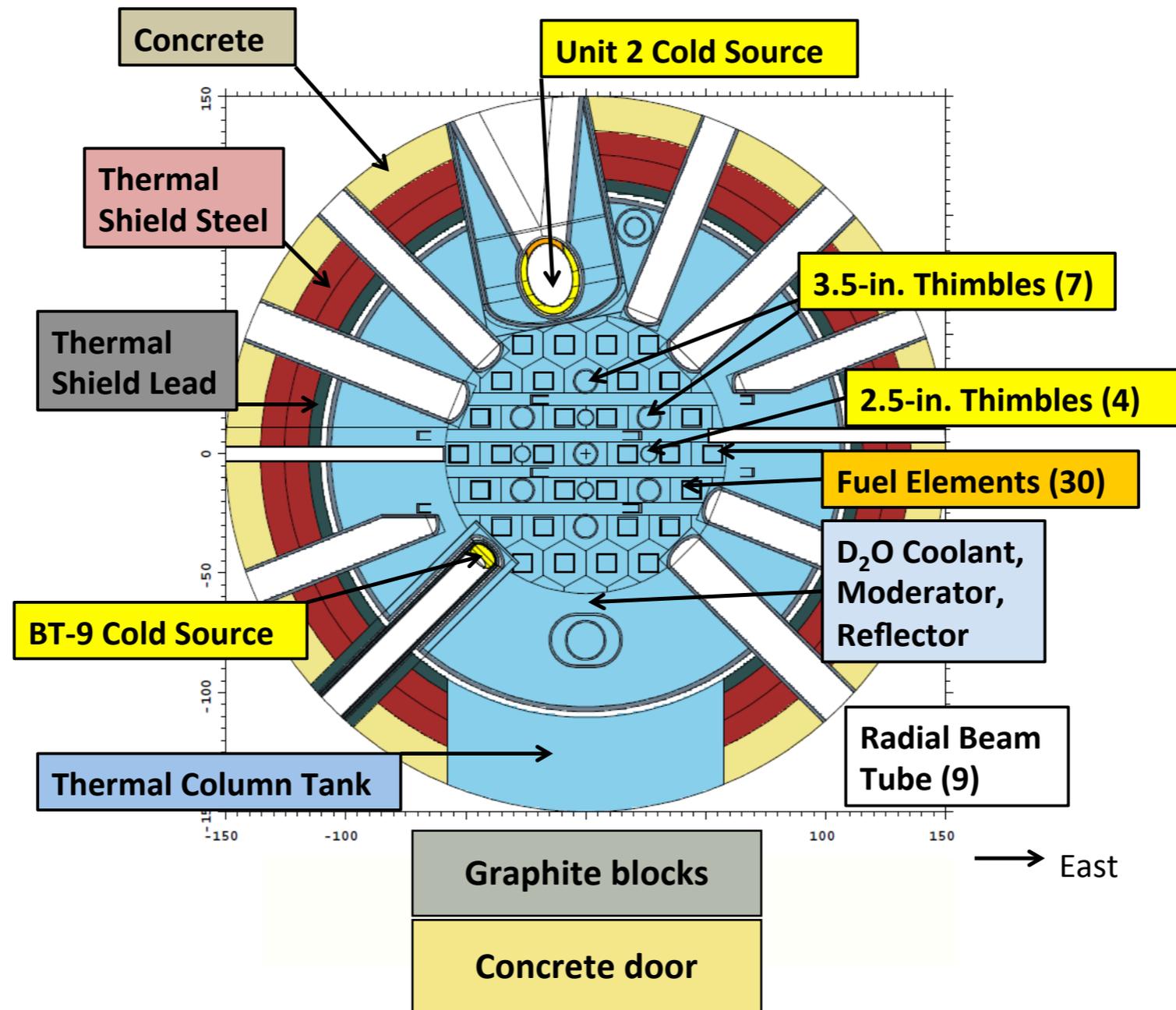
20 MW_{th} heavy water reactor (HEU; will transition along with the rest)

Power stability maintained to 1-2%

Burn geometry stable radially, some vertical power density shift w/ time (<10 cm)

250 average operating days per year (consistent 68% uptime)

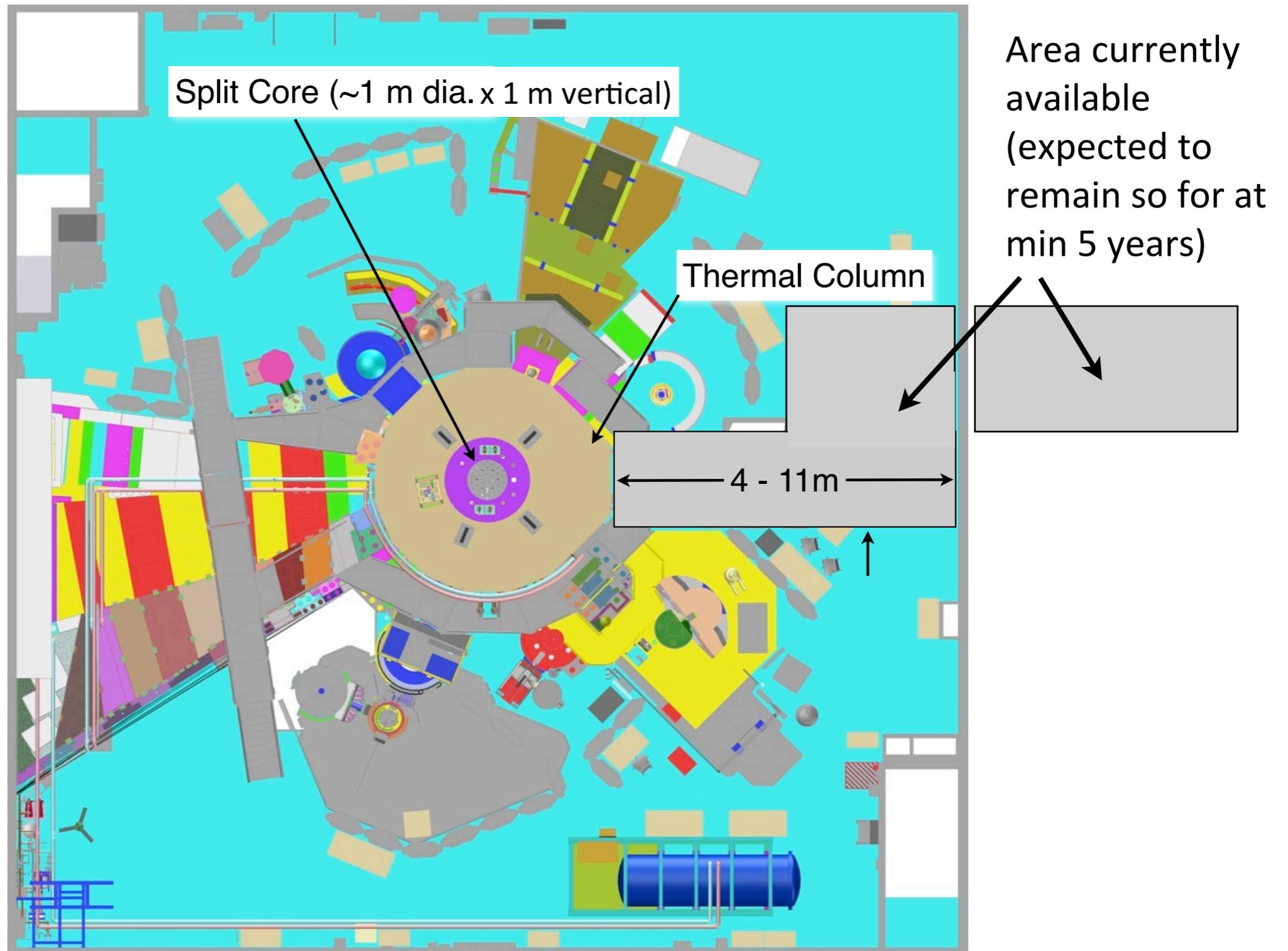
NBSR: Split core reactor dedicated to neutron research



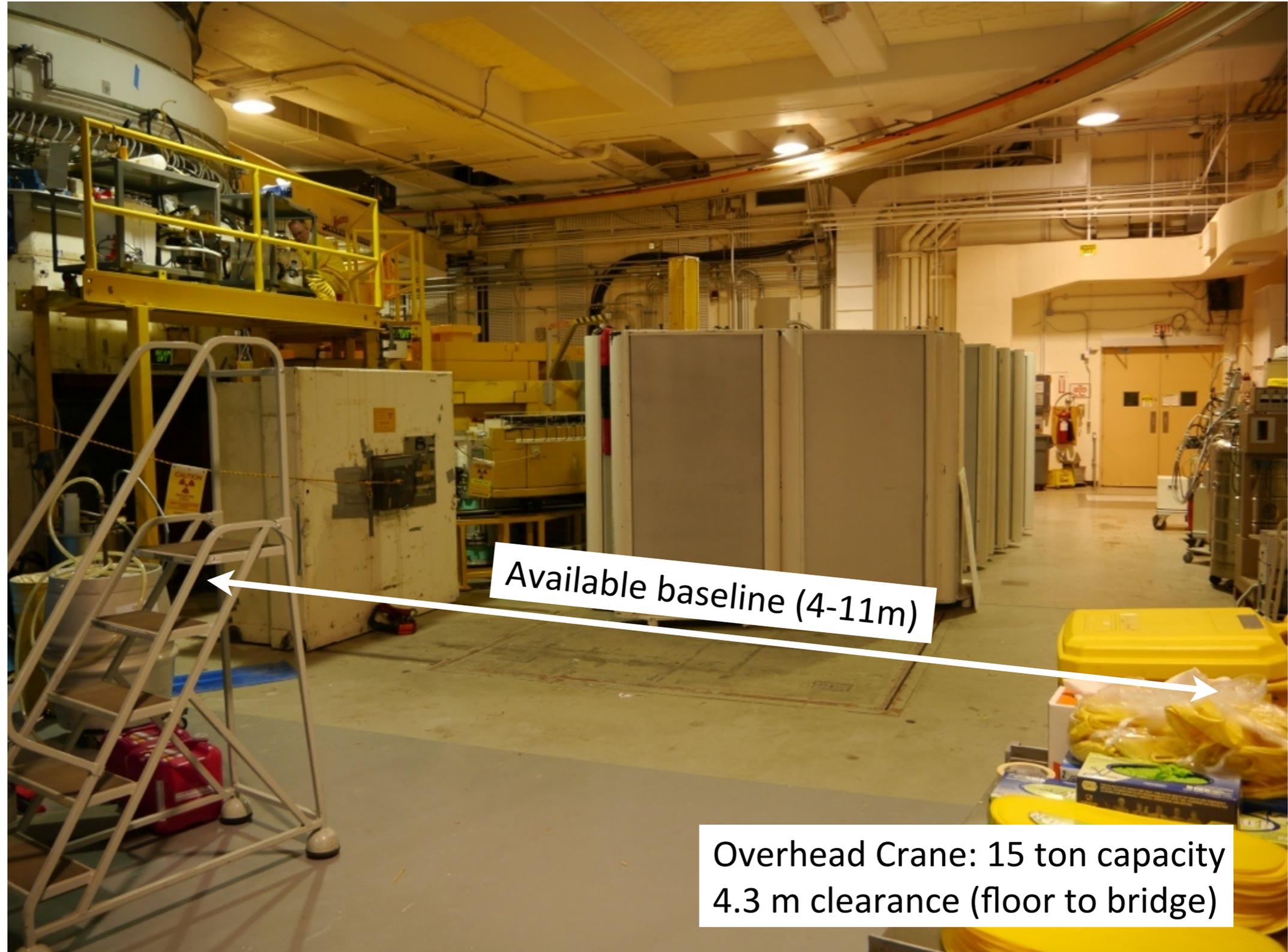
7 Reentrant neutron guides & “Thermal column” (heavy water tank: high-flux thermal neutron beams)

Complete assembly currently modeled in MNCP (fast neutron BG expected to be lowest in confinement)

Confinement Building Layout



NIST National Bureau of Standards Reactor (NBSR)

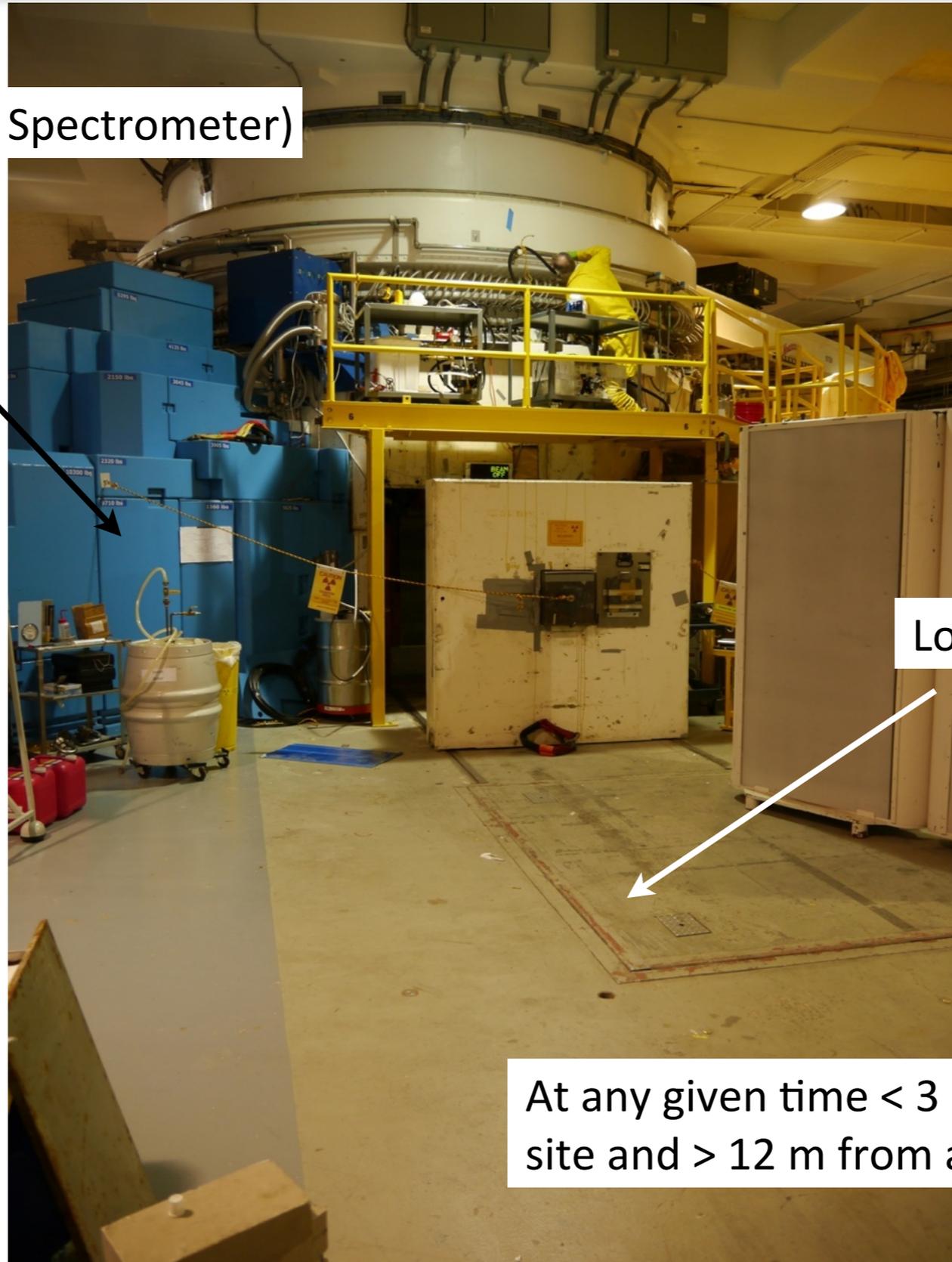


Available baseline (4-11m)

Overhead Crane: 15 ton capacity
4.3 m clearance (floor to bridge)

NIST National Bureau of Standards Reactor (NBSR)

MACS (Multi-Axis Crystal Spectrometer)



Lower level access door

At any given time < 3 'cores' of spent fuel on site and > 12 m from available space

Floor Loading Considerations

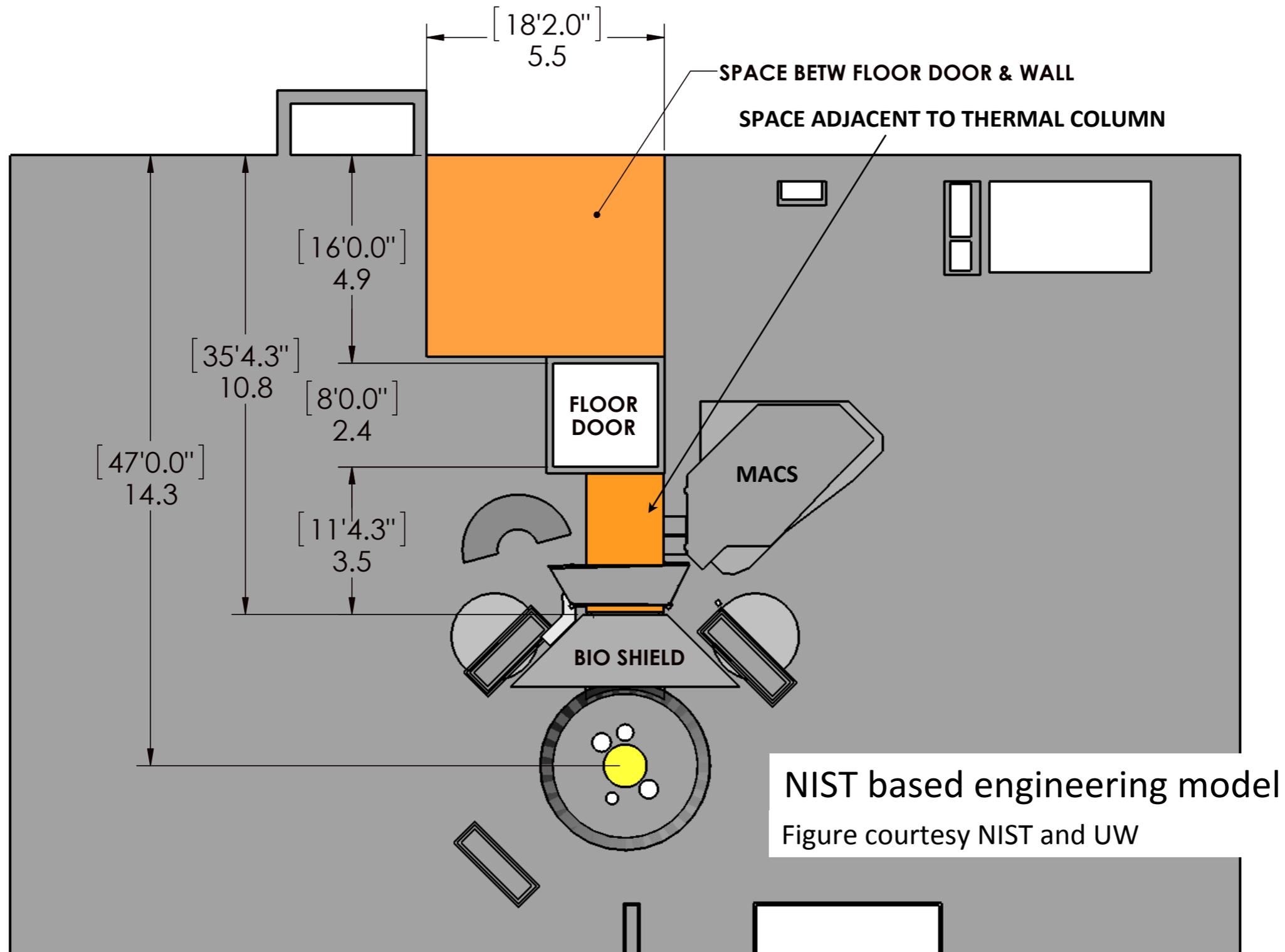
MACS installation



Load spreader

Floor loading calculations carried out by Merrick & Co.
(full building model already exists)

Confinement Building Layout



Confinement Building Layout

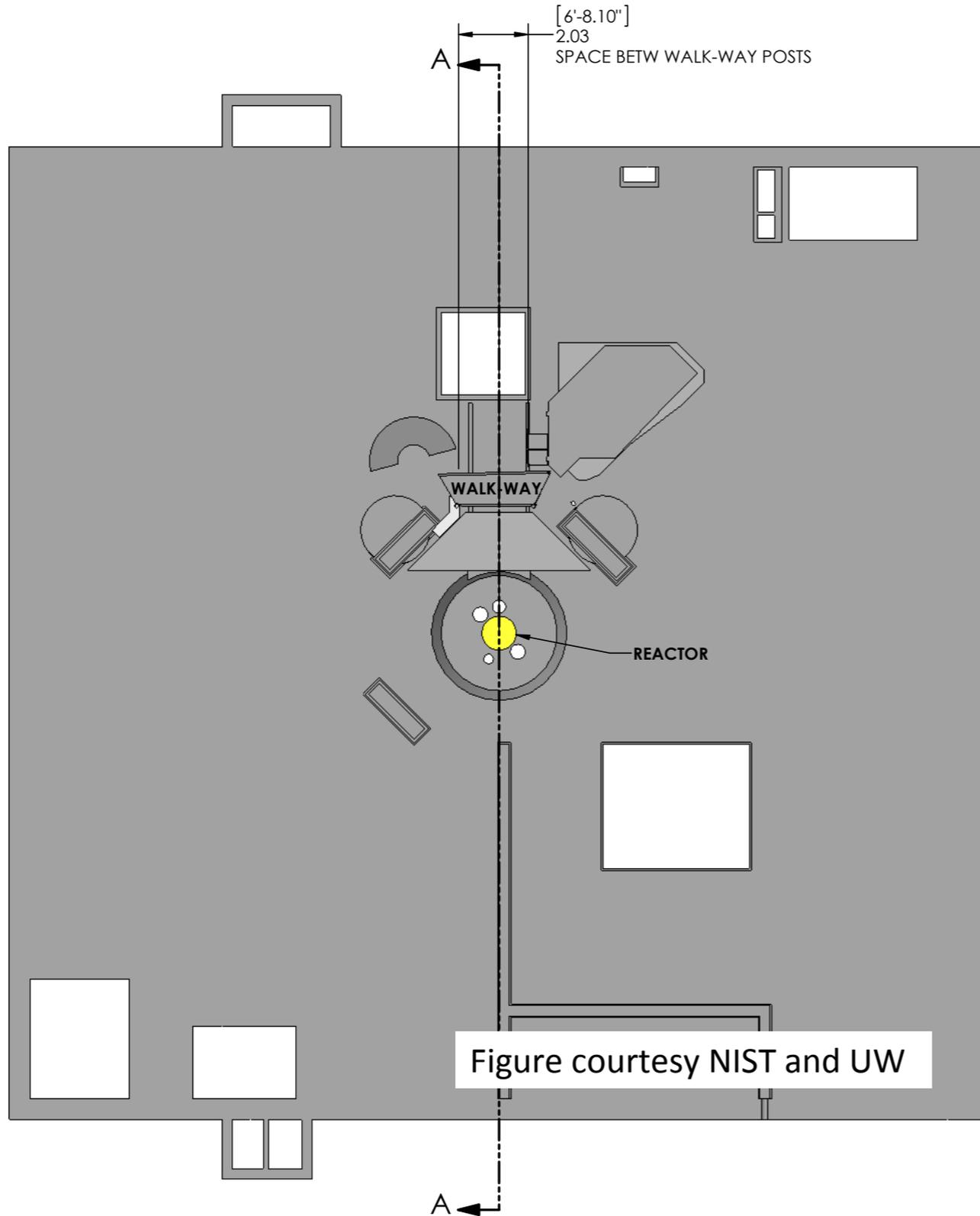
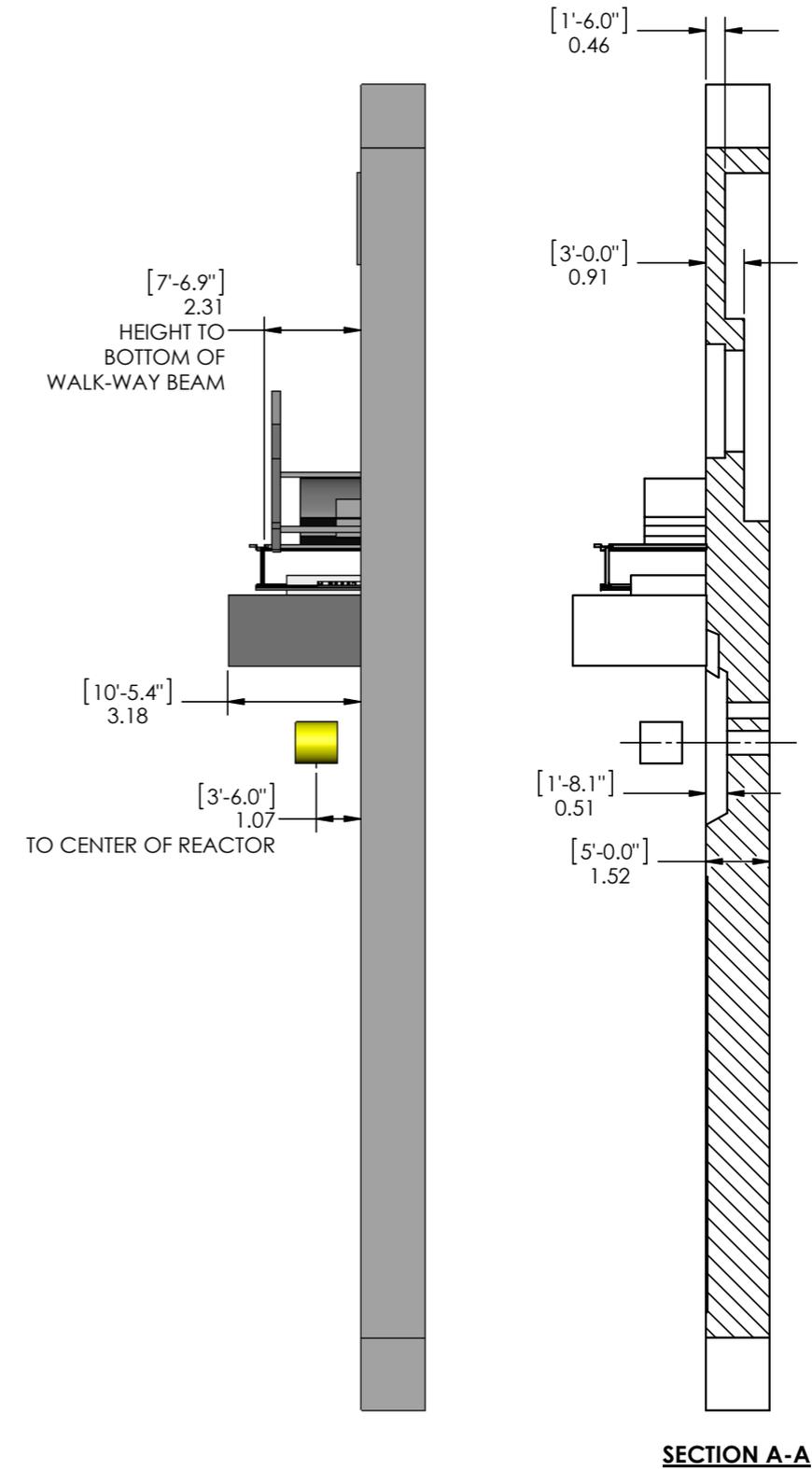


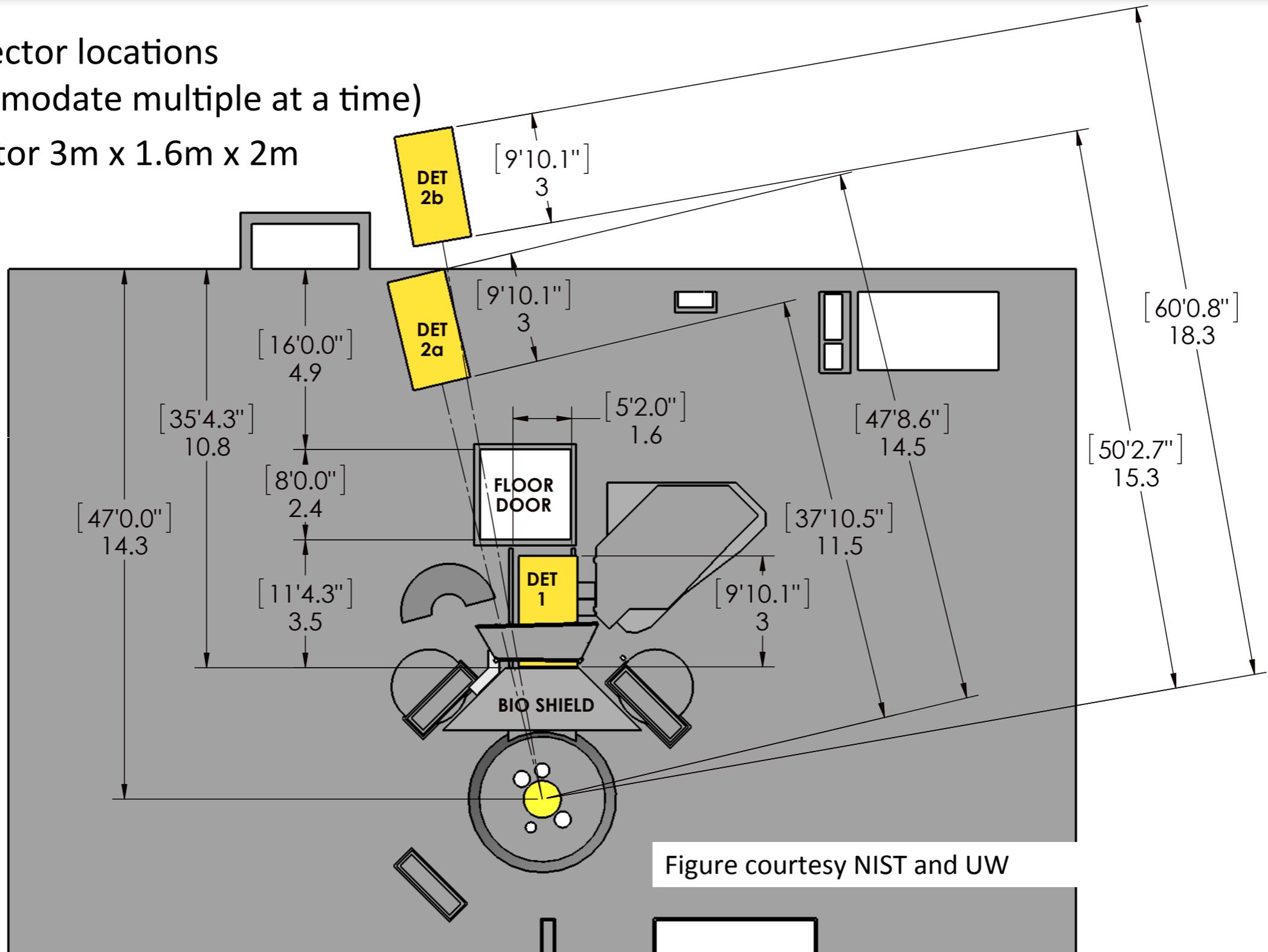
Figure courtesy NIST and UW



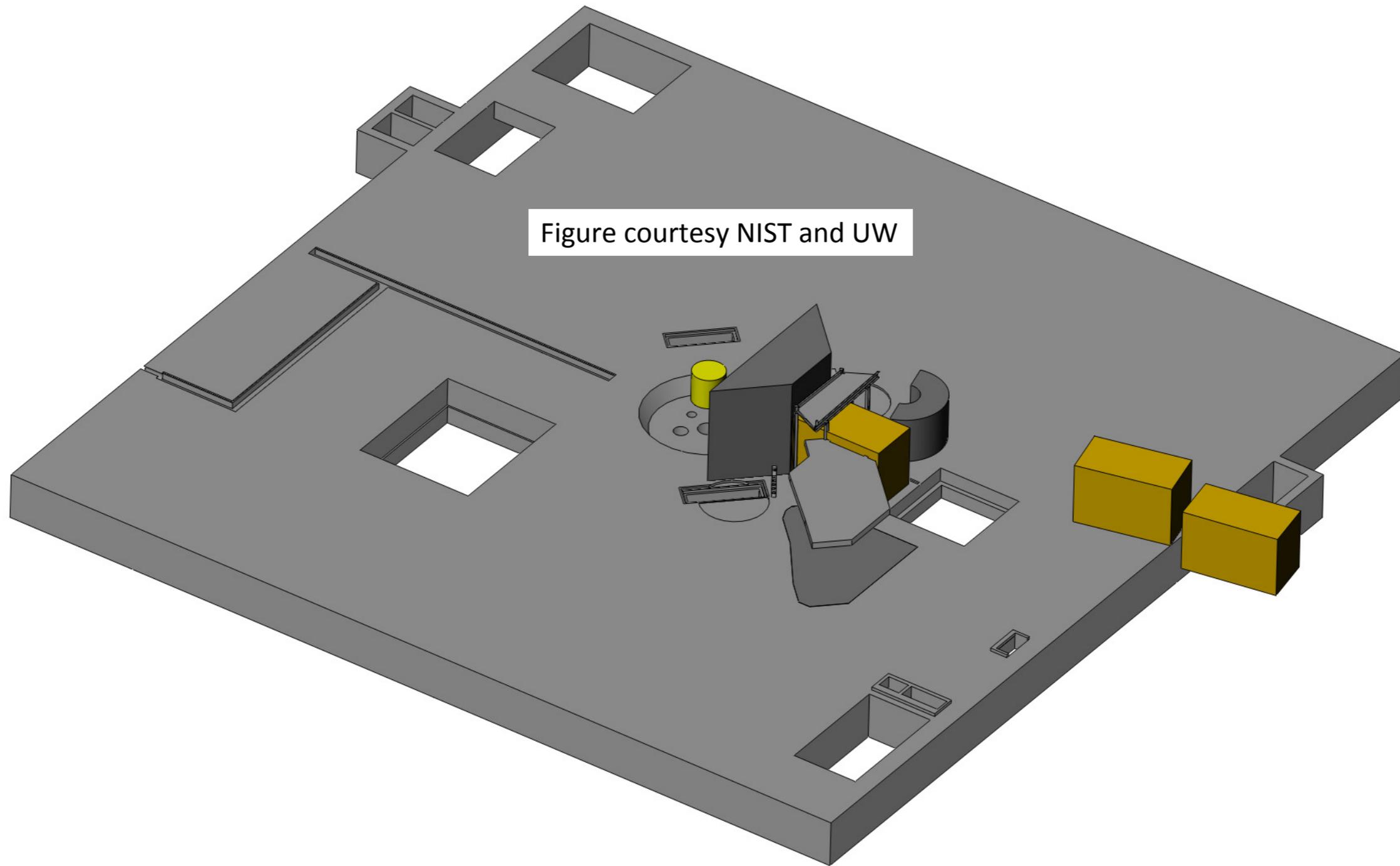
Confinement Building Layout

Possible detector locations
(likely accommodate multiple at a time)

Model detector 3m x 1.6m x 2m



Confinement Building Layout



Confinement Building Layout

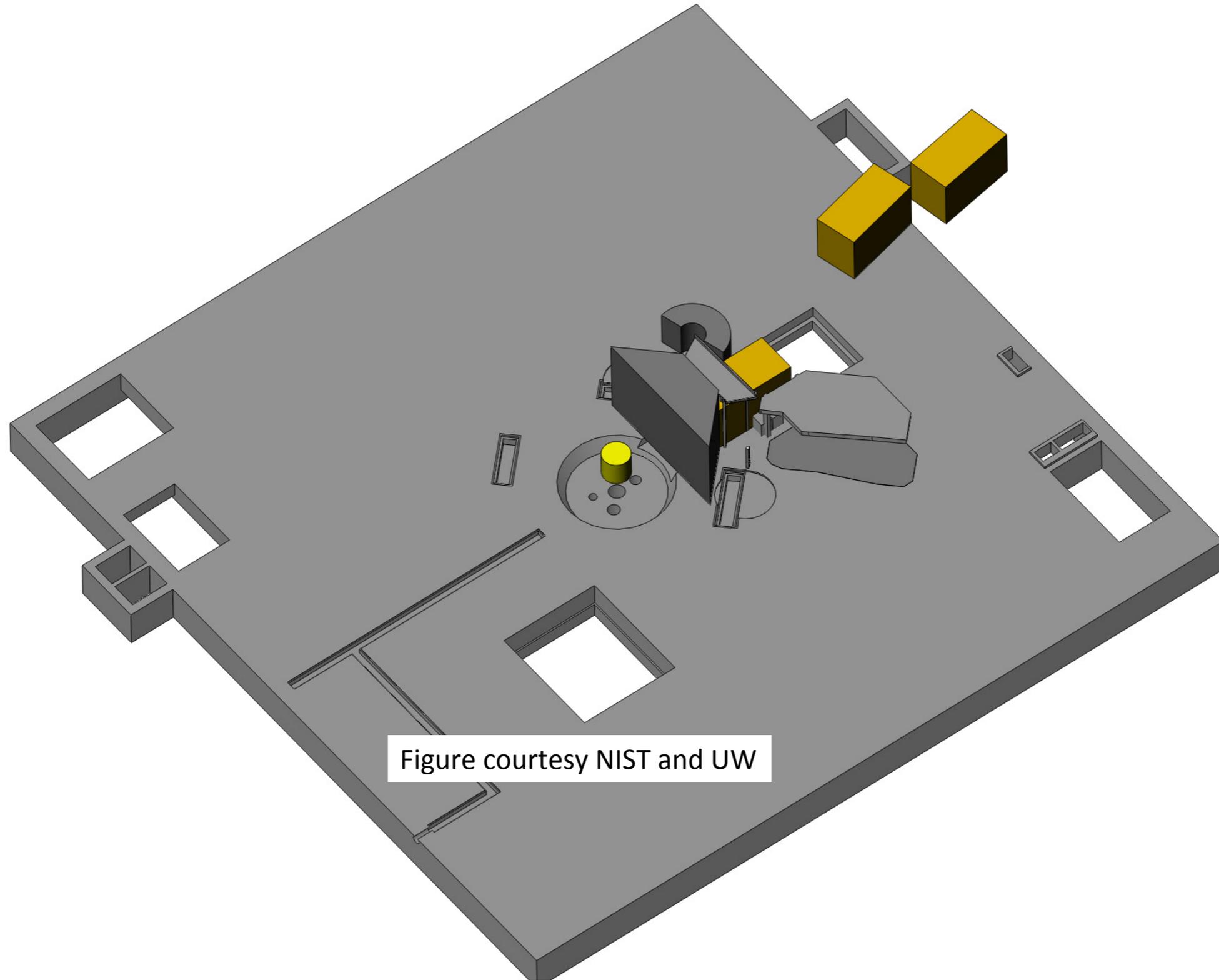


Figure courtesy NIST and UW

Conclusions:

NIST Physical measurements laboratory in support of project

NIST has space available (now) for a variety of baselines and detector configurations
(will remain available for the five year timescale min.)

NCNR currently providing basic engineering support

Easy (relatively) access