



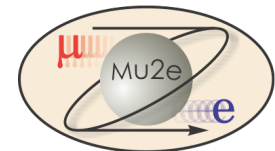
Mu2e Remote Handling Review

Remote Handling Overview

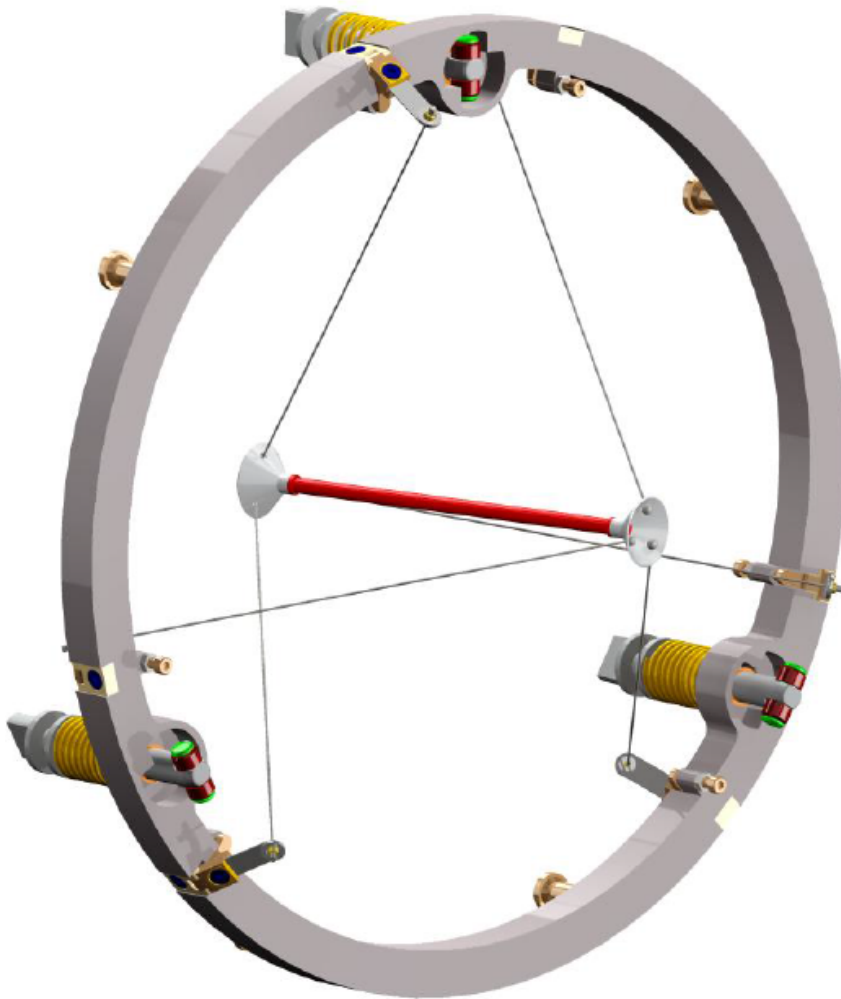
Ryan Schultz

Deputy L3 Manager Target Station

3/3/2015

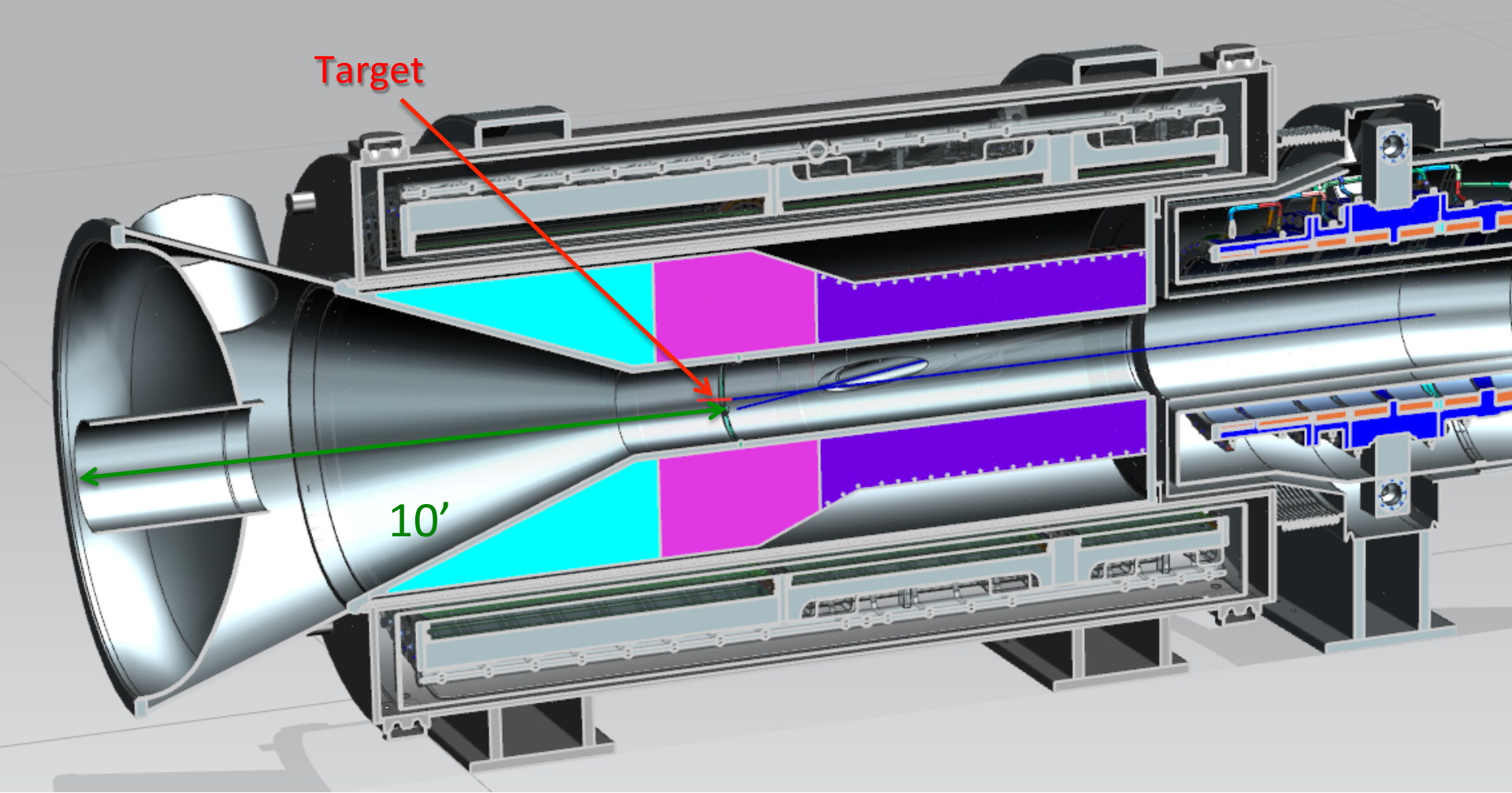


Remote Handling Overview

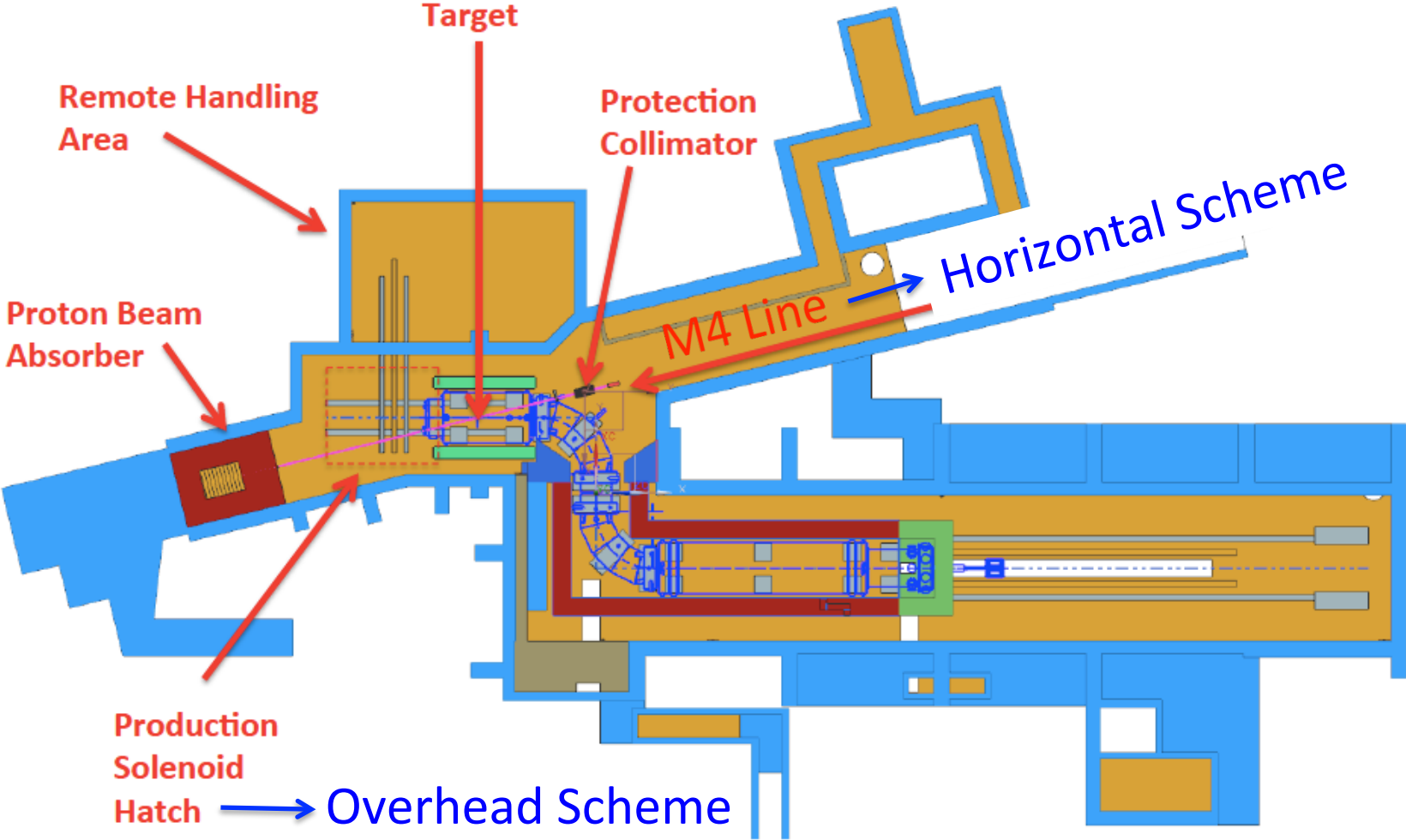


- ~ 210 R/hr @ ft
- Design lifetime of 1 year
- Radiatively cooled:
 - higher temps, corrosion
- Convectively cooled:
 - cooler temps
 - higher complexity

Remote Handling Overview



Remote Handling Overview



Remote Handling Overview

- Technical Design Report (2014)
 - Leave used components in cask within Target Hall <- Outdated
 - targets, windows, etc.
 - finite capacity
- Used Components:
 - will be removed from the Target Hall in a cask
 - Horizontal Scheme cask removed via M4 line
 - Overhead Scheme cask removed via PS Hatch
- Advantages of removing components from target hall:
 - Simplifies cask designs, reduces failure probability
 - Allows for infinite target change-outs

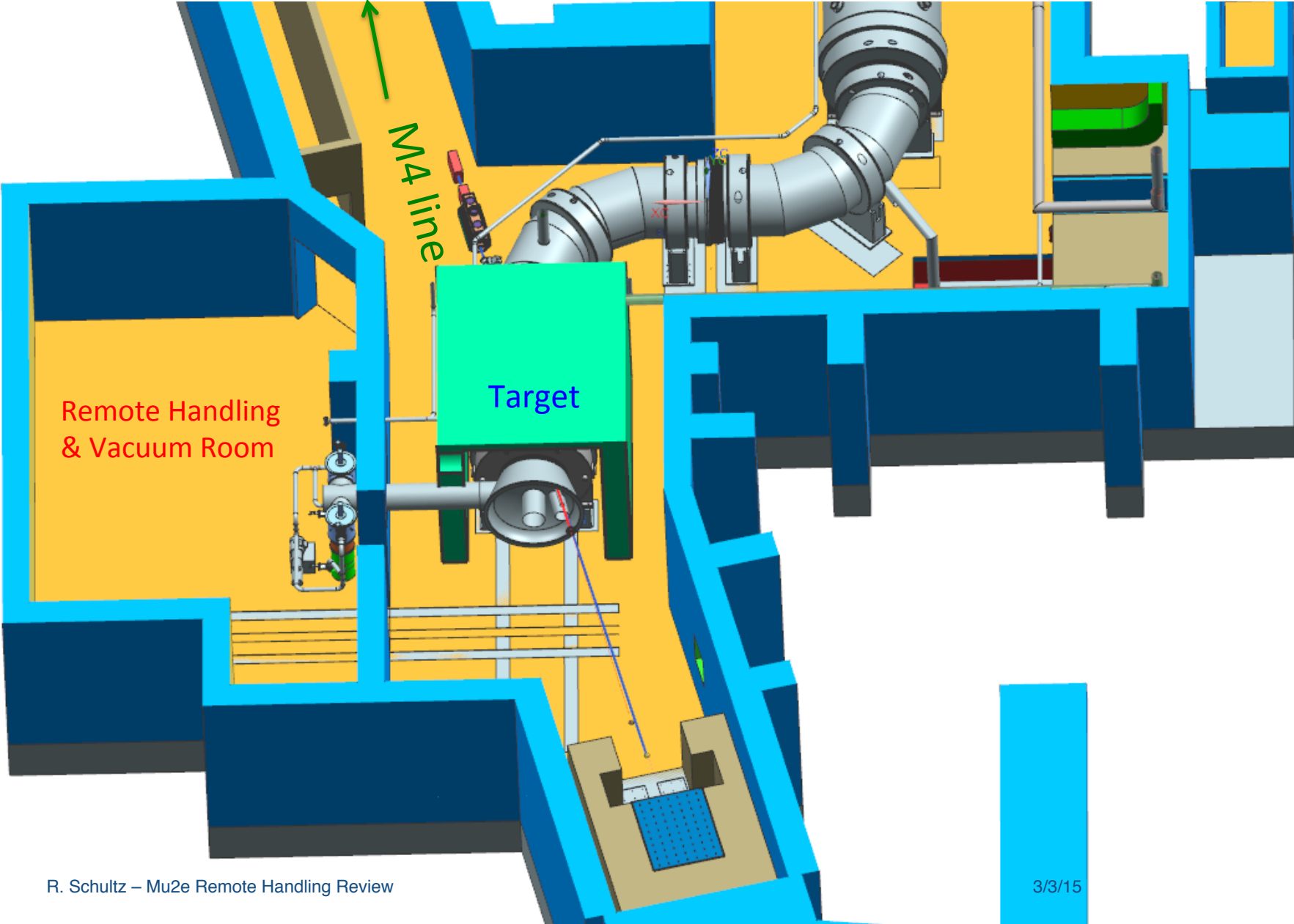
Remote Handling Overview

- Production Solenoid is a cryostat under vacuum

General Target Replacement Steps:

1. Vent and remove the window
2. Remove target – reaching in 10'
3. Place target into cask
4. Remove cask from area
5. Install new target
6. Install new window
7. Achieve appropriate vacuum level

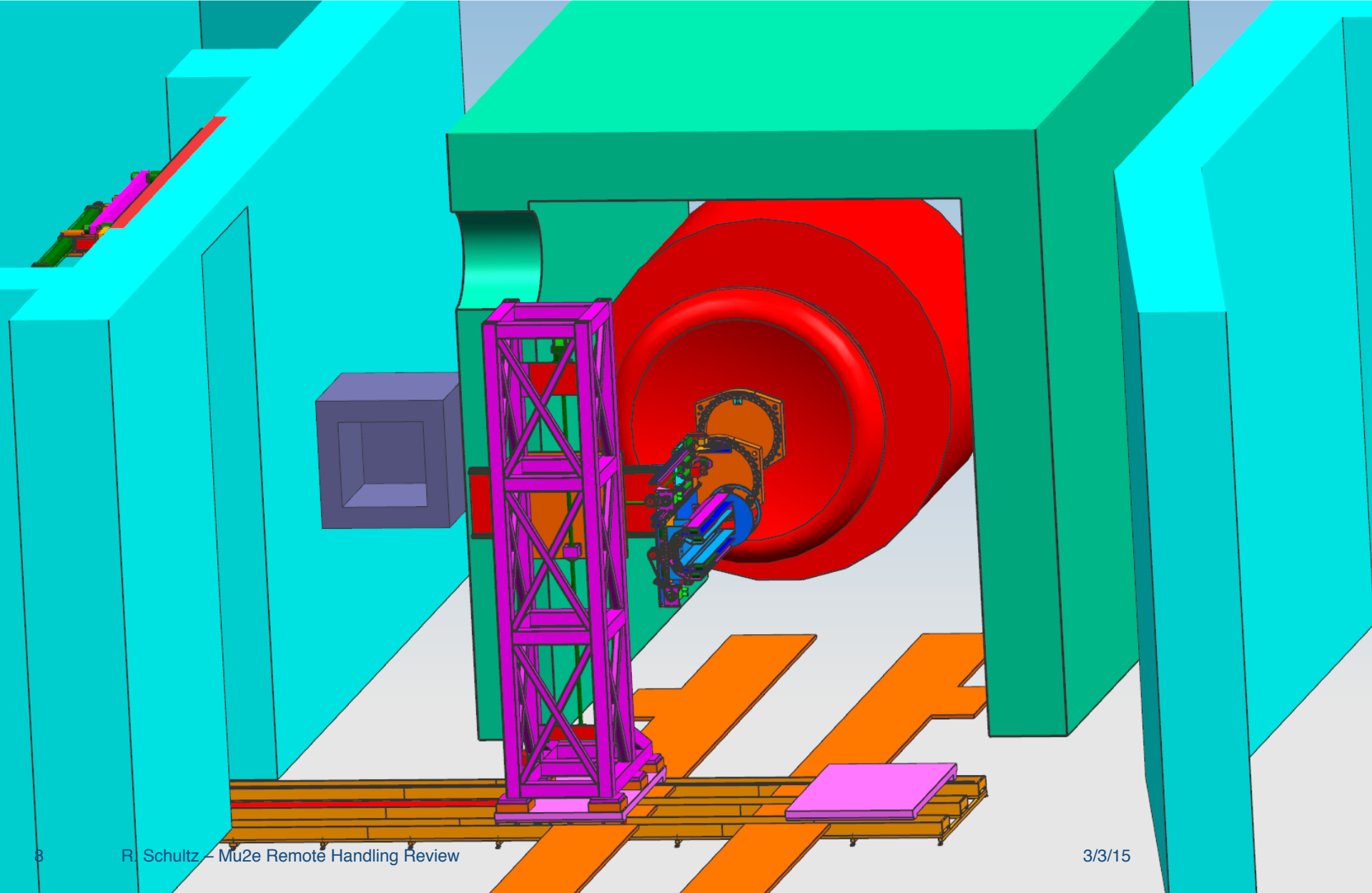
Horizontal Scheme



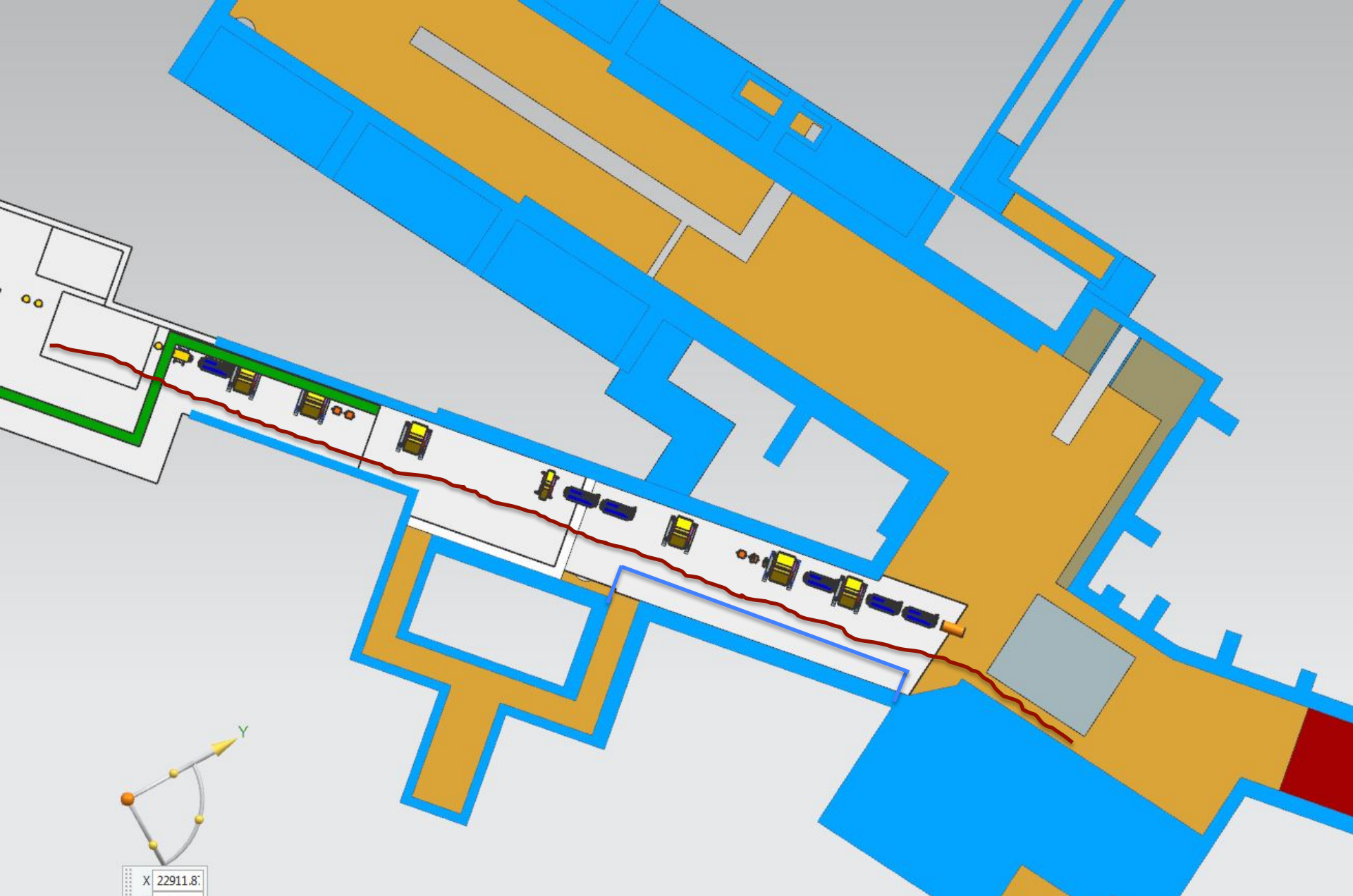
Horizontal Scheme

Modeling - [F09074792-A-REMOTE HANDLING MAIN ASSY (Modified) (!)]

5



Horizontal Scheme



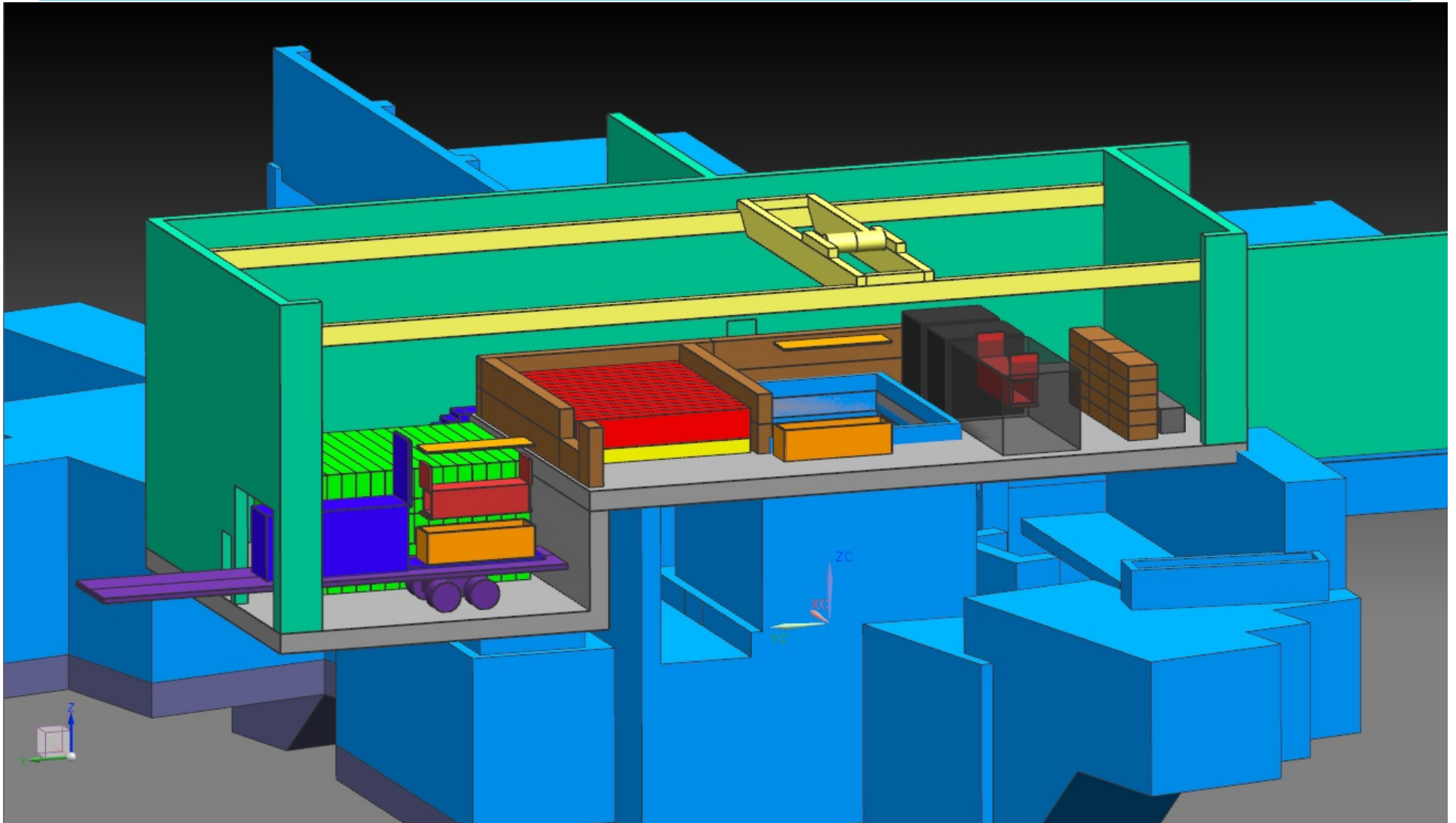
Horizontal Scheme

- Remote Handling room
 - Robot for target removal
 - Single robot, multi-functional
 - Parts from robot must be removed during operation
 - No crane coverage
 - Vacuum equipment
 - Contamination controls for this room are necessary
- Target is placed into a cask next to HRS
 - Cask removed via M4 line
 - M4 removal is still conceptual, little design work has been done

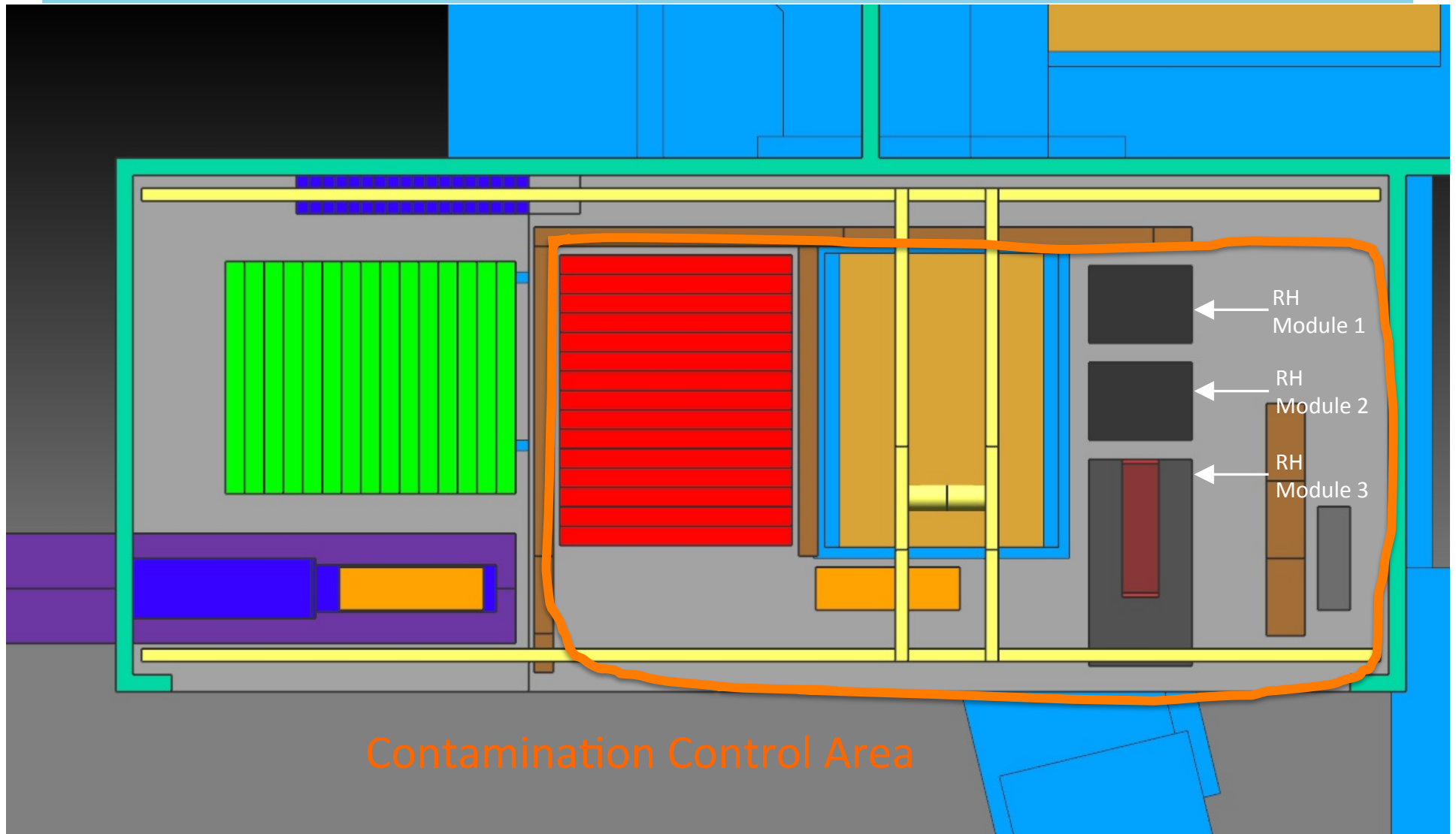
Overhead Scheme

- Above ground building
 - Built over Production Solenoid Hatch
 - 20 Ton Crane capacity – sized for sufficiently shielded casks
 - Loading bay for component removal
 - Building is NOT a storage facility
 - Remote Handling Area
 - Work area for modules of different functionality
 - Contamination control area
- Underground Remote Handling room
 - Reduced in size for vacuum equipment only
 - Shield door also not necessary

Overhead Scheme



Overhead Scheme



Overhead Scheme

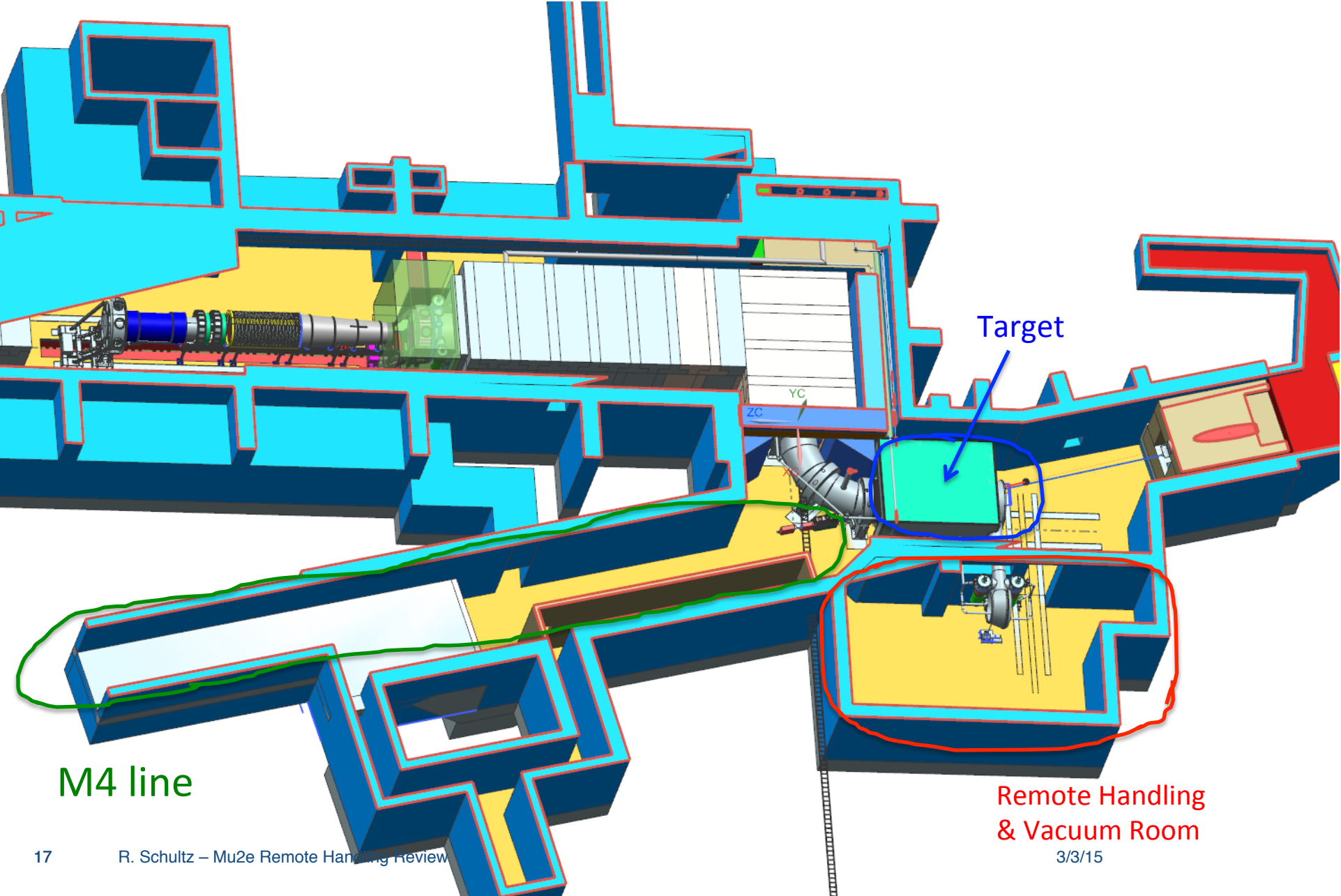
- Above ground building
 - Built over Production Solenoid Hatch
 - 20 Ton Crane capacity – sized for sufficiently shielded casks
 - Loading bay for component removal
 - Building is NOT a storage facility
 - Remote Handling Area
 - Work area for modules of different functionality
 - Contamination control area
- Underground Remote Handling room
 - Reduced in size for vacuum equipment only
 - Shield door also not necessary

Charge to Review Committee

- Horizontal Scheme
 - Is baseline (horizontal) technically sound?
 - Risks, contingencies, radiological hazards been addressed?
- Overhead Scheme
 - Is alternative (overhead) technically sound?
 - Risks, contingencies, radiological hazards been addressed?
 - Are there significant advantages to warrant increased cost?
- Reasonable assessment of both schemes
 - not necessarily a choice or preference

Backup Slides

Horizontal Scheme



M4 line

Remote Handling
& Vacuum Room