

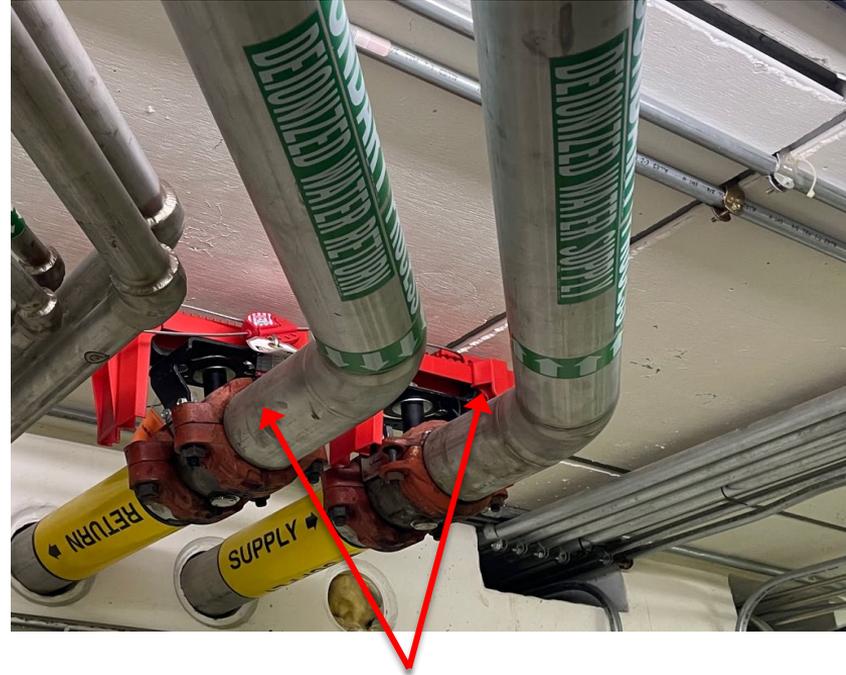
# Hazardous Energy Control (HEC) – PHASE 3

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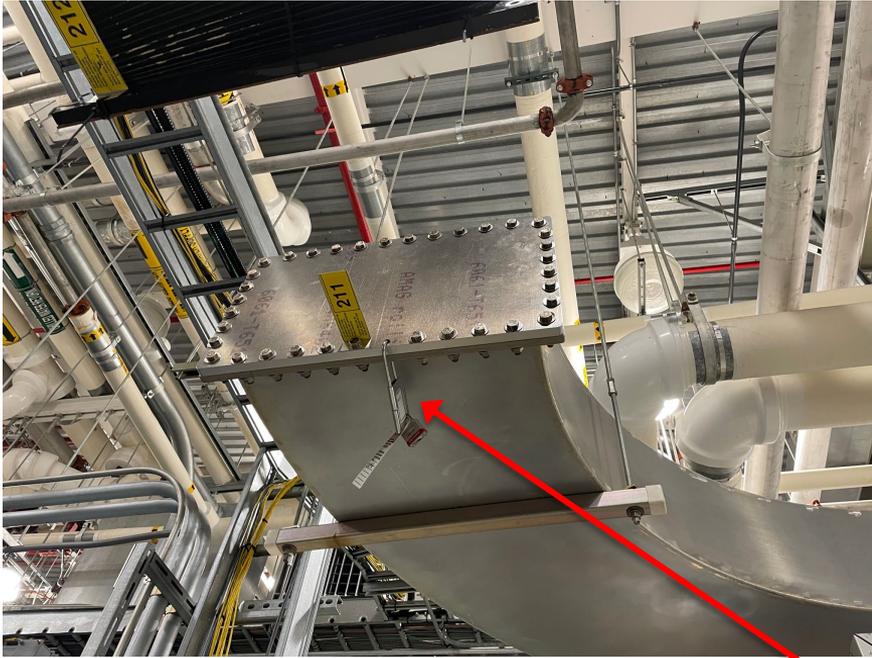
# HAZARDOUS ENERGY CONTROL – PHASE 3

- Transition of HEC from Physical Separation, aka "air gap," to isolation by LOTO
- Final HEC plan review complete and plan updated
- Lessons learned:
  - HEC status and activity log
  - HEC manager role
  - Change management process



SR Supply and return Cu water isolation valves

# HEC – PHASE 3 – TRANSITION TO LOTO



RF-2 Waveguide example

Blanking Plate Group LOTO

Sections of waveguide were removed, and the source side blanked off to eliminate RF transmission to the storage ring for multiple scopes of work on RF systems. The air gapping was performed by Argonne personnel.

# HEC – PHASE 3 – RESTORATION OF ENERGY

- Restoration of power to **receptacles (emergency and technical power)** to perform bakeouts, test and checkout, in following the project plan
- Complete work and validate readiness to plug in equipment – QA
- The configuration is changing – no longer an air gap, LOTO to control hazardous energy



Questions: Contact [Mike Edelen](#), [Dan Evans](#) or [Greg Markovich](#)

# HEC – PHASE 3 – RESTORATION OF ENERGY

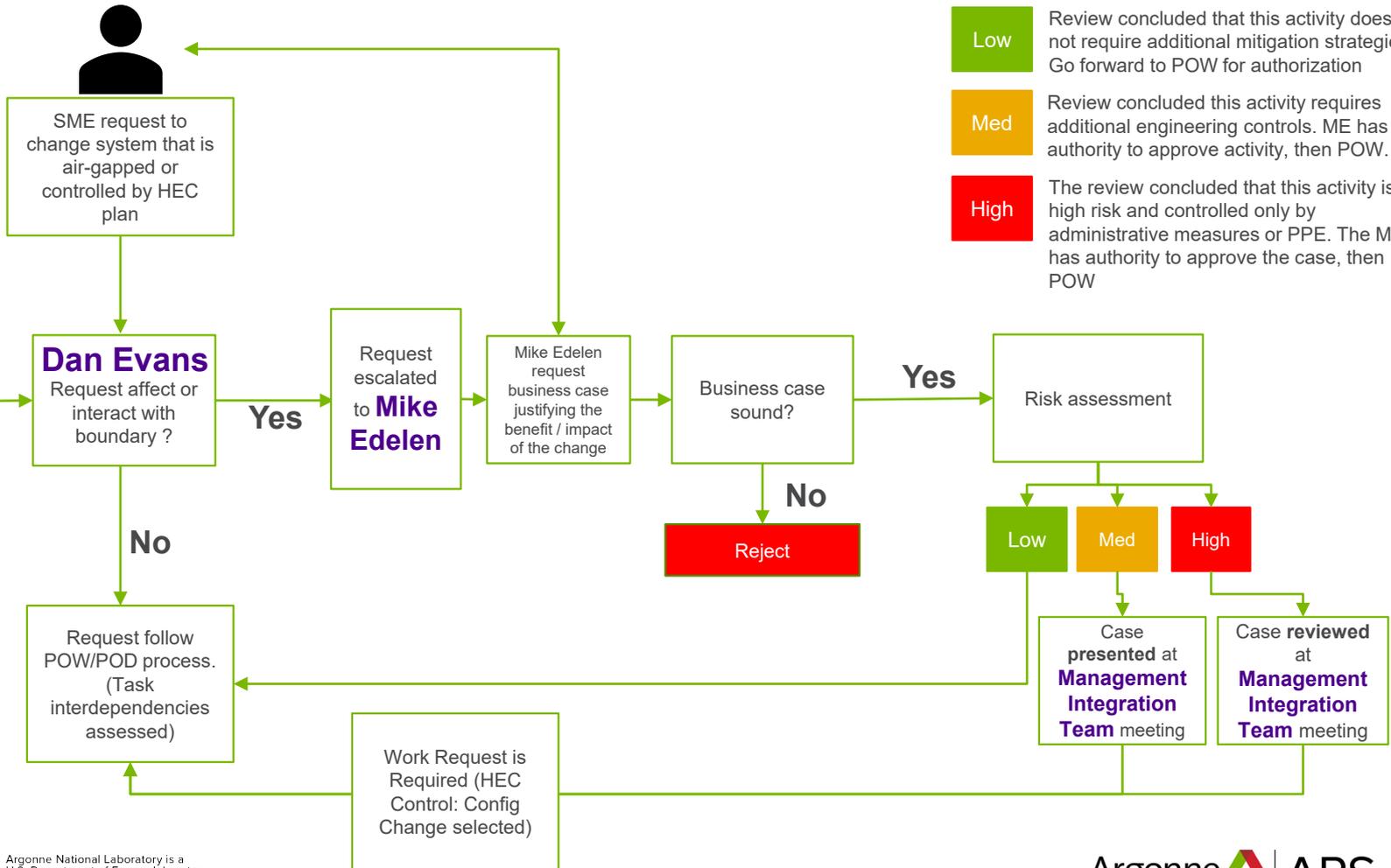
- Emergency power is restored
- Technical power is restored in S10-S25 for 480/208/120 VAC receptacles
- APS-U SharePoint site has LOTO and power status
- Validation from test and checkout before plugging in new, updated or modified equipment



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HEC list of controls



- Low** Review concluded that this activity does not require additional mitigation strategies. Go forward to POW for authorization
- Med** Review concluded this activity requires additional engineering controls. ME has authority to approve activity, then POW.
- High** The review concluded that this activity is high risk and controlled only by administrative measures or PPE. The MIT has authority to approve the case, then POW

# HEC PHASE 3 – LOTO AND HEC STATUS

**Accelerator** Glenn

Current Machine Parameters - Released Version  
 Latest Machine Parameters - Working File

**Experimental Facilities** Mohan Ramani

Beamline Design Information      Recent Beamline Talks  
 Outreach      Working Groups  
 Science Case Material

**Front Ends & Insertion Devices** Mohan Ramani

Front End Parameters      Beamline Source Parameters & Spectra  
 Recent Talks

**Removal & Installation** Mark Erdmann | Robert

Storage Ring      POW (APS-U Only)  
 Experimental Hall      Plan Of the Day Folders  
 Ring Access      **LOTO Status**  
**Power Status**

**APSU Sharepoint site with up-to-date Power and LOTO Status**

DC-DC converter cabinet LOTO status				
Double Sector	Zones A-E/Zone F Group Boxes	Zone Group LOTO Box	Technical Distribution Panel	180 VDC Control
2 - 3	<b>Zones A - E</b> ✓	Zone A Group LOTO Box	TDP-X1-1	<b>TDP-X3-1</b> ✓
4 - 5			TDP-X2-1	<b>TDP-X4-1</b> ✓
6 - 7			TDP-X1-2	<b>TDP-X3-2</b> ✓
8 - 9			TDP-X2-2	<b>TDP-X4-2</b> ✓
10 - 11		Zone B Group LOTO Box	TDP-X1-3	<b>TDP-X3-3</b> ✓
12 -13			TDP-X2-3	<b>TDP-X4-3</b> ✓
14 - 15			TDP-X1-4	<b>TDP-X3-4</b> ✓
16 - 17			TDP-X2-4	<b>TDP-X4-4</b> ✓
18 - 19		Zone C Group LOTO Box	TDP-X1-5	<b>TDP-X3-5</b> ✓
20 - 21			TDP-X2-5	<b>TDP-X4-5</b> ✓
22 - 23			TDP-X1-6	<b>TDP-X3-6</b> ✓
24 - 25		Zone D Group LOTO Box	TDP-X2-6	<b>TDP-X4-6</b> ✓
26 - 27			TDP-X1-7	<b>TDP-X3-7</b> ✓
28 -29			TDP-X2-7	<b>TDP-X4-7</b> ✓
30 - 31		Zone E Group LOTO Box	TDP-X1-8	<b>TDP-X3-8</b> ✓
32 - 33			TDP-X2-8	<b>TDP-X4-8</b> ✓
34 - 35			TDP-X1-9	<b>TDP-X3-9</b> ✓
36 - 37		Zone F Group LOTO Box	TDP-X2-9	<b>TDP-X4-9</b> ✓
38 - 39			TDP-A1	<b>TDP-A3</b> ✓
40 - 1	TDP-A2		<b>TDP-A4</b> ✓	

**Detailed LOTO Status**