



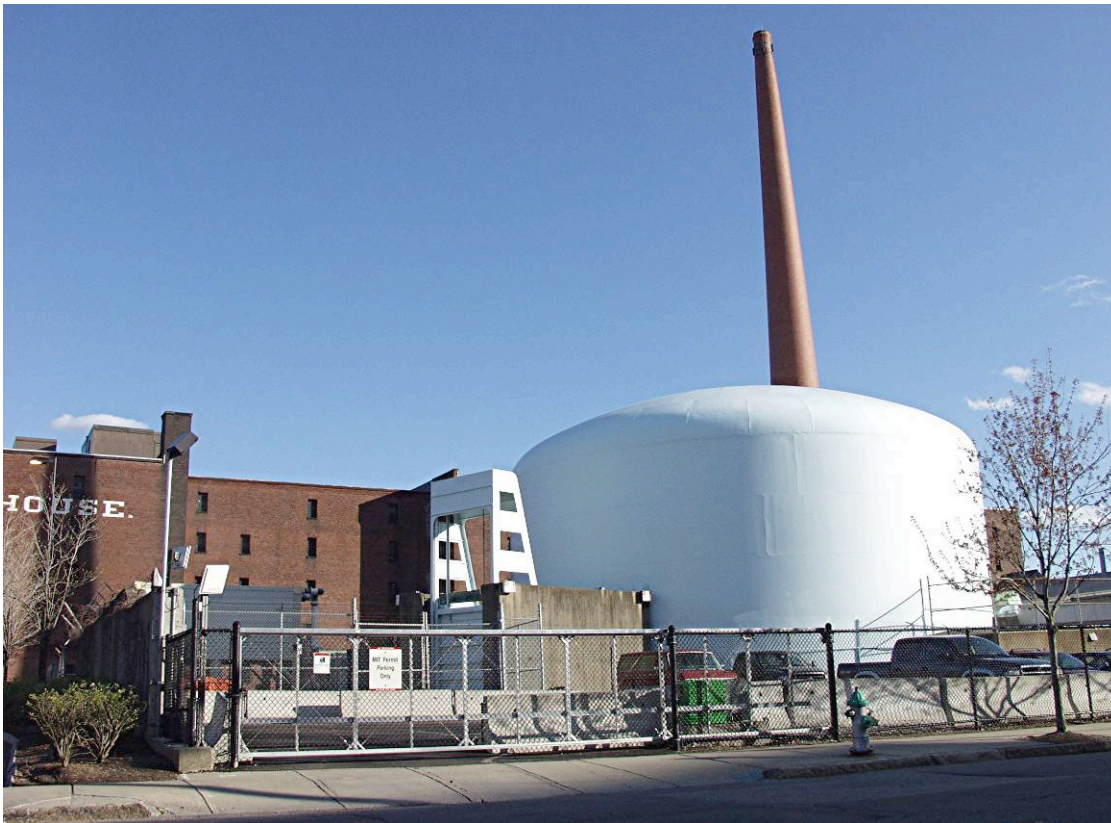
Edward S. Lau

Superintendent of Operations & Maintenance

Modernization of
MIT Research Reactor
Primary and Secondary
Process Systems

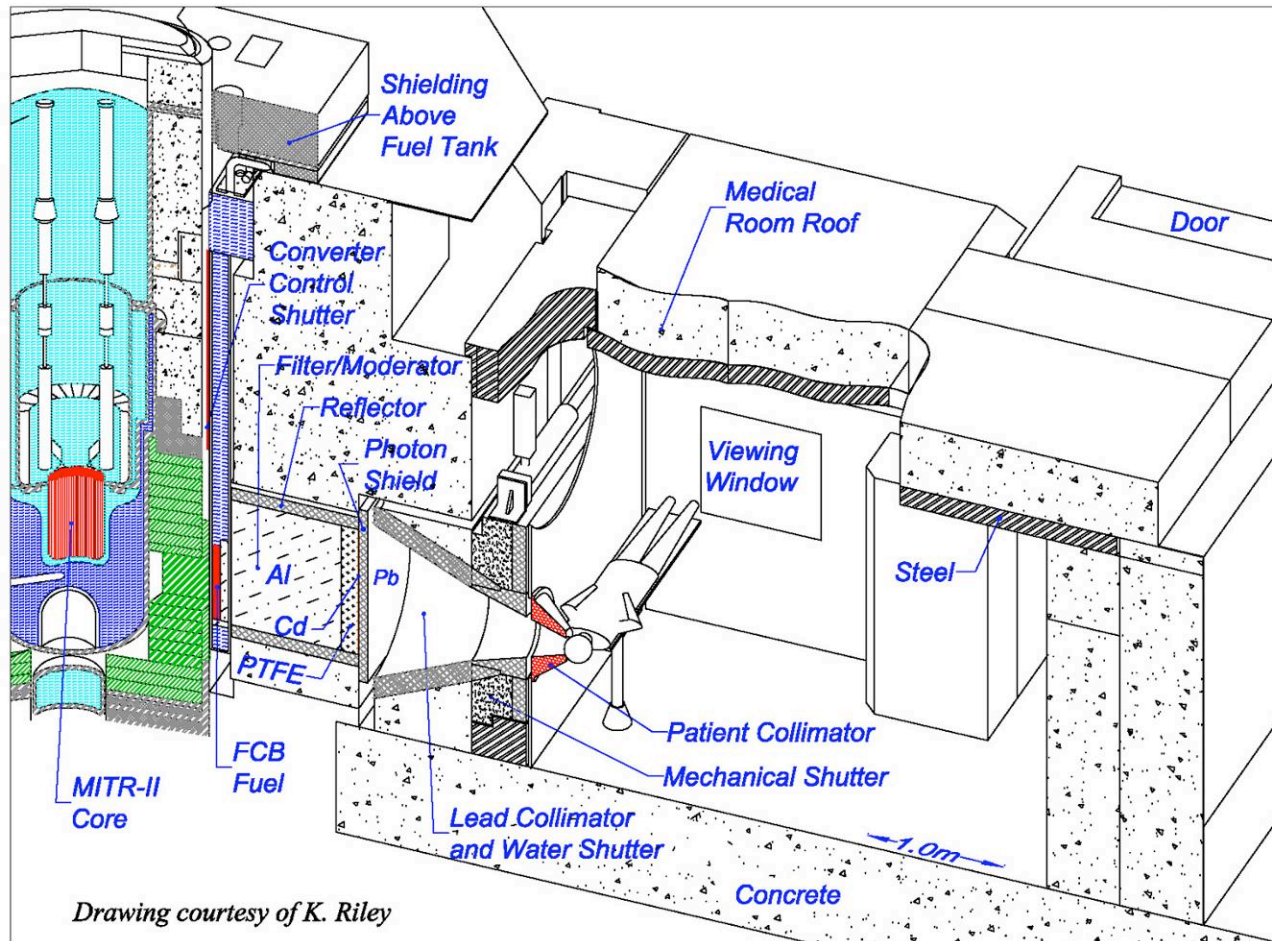
TRTR / IGORR September 19-23, 2010

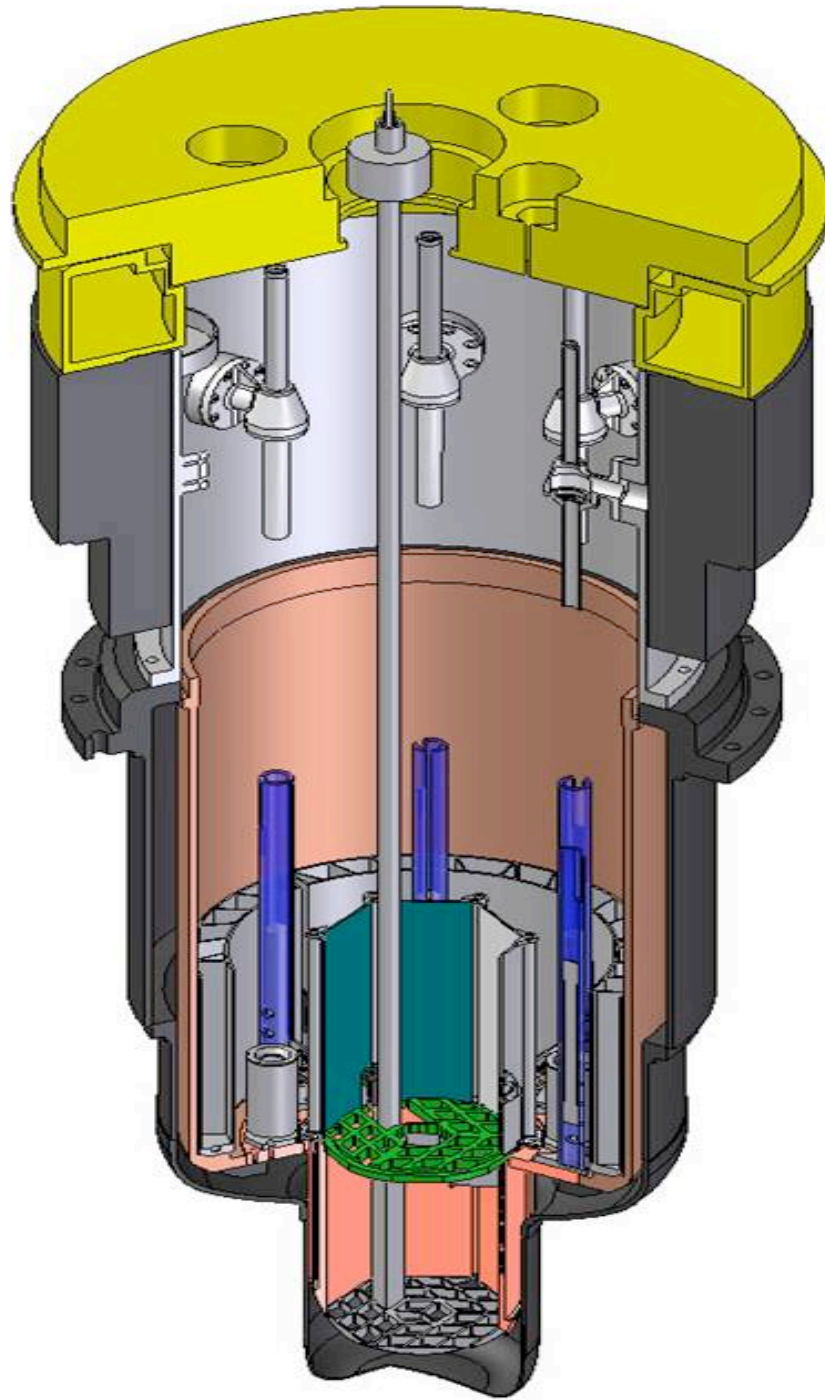
5 MW MIT Research Reactor



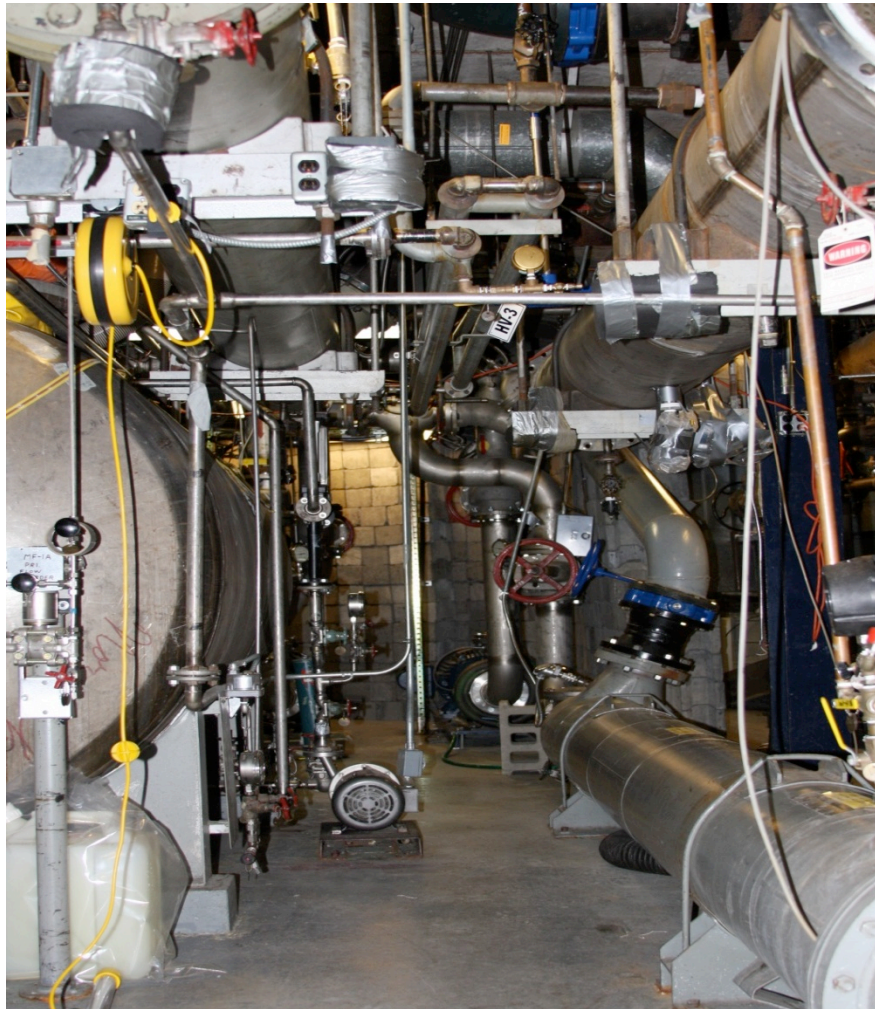
- Operating since 1958, upgraded in 1975
- Tank type, MTR fuel
- Two-loop H₂O Cooling -- Primary & Secondary
- Heat Exchangers
- Two Primary Pumps
- Two Secondary Pumps

MIT Reactor Isometric View





Three Parallel Main Heat Exchangers



Associated Piping in the Equipment Room



Heat Exchanger Performance Deterioration



[Piping Condition]



Demolition Phase



Demolition Phase



Demolition Phase



Demolition Phase



Demolition Phase



Q/A Inspection & Inventory



Q/A Inspection & Inventory



[Q/A Inspection & Inventory]



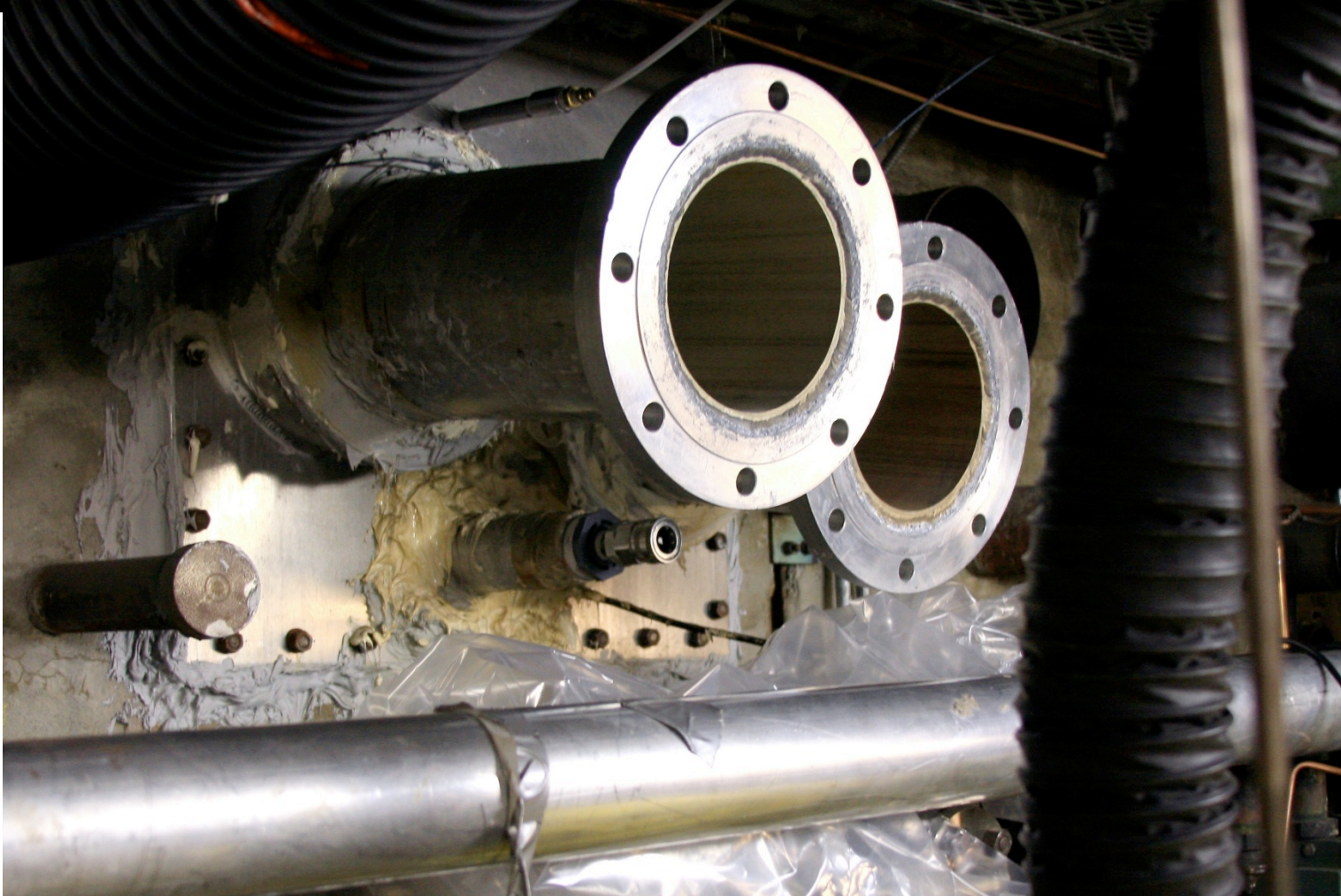
[Q/A Inspection & Inventory]



Q/A Inspection & Inventory



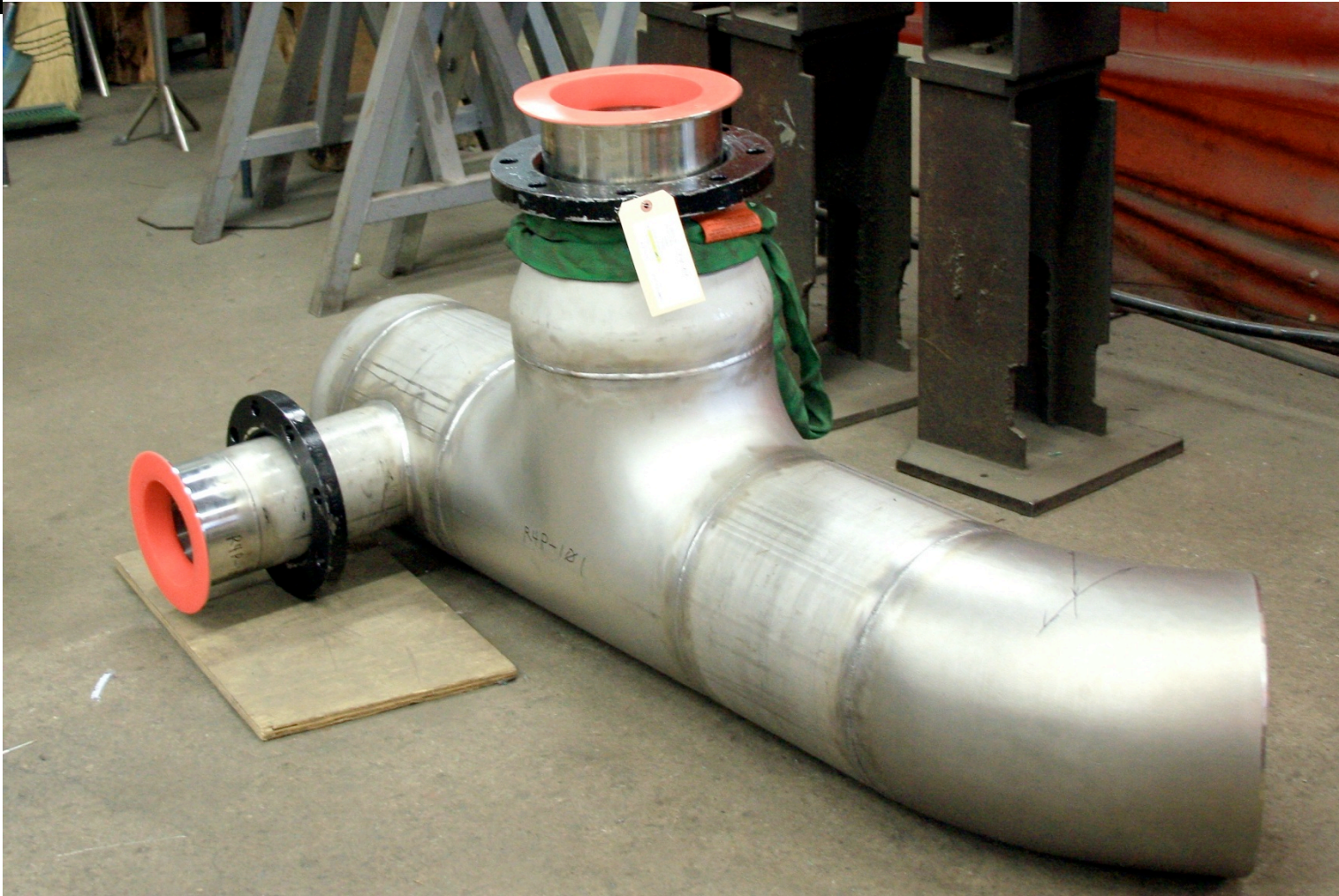
Construction Phase



Construction Phase



Construction Phase



Construction Phase



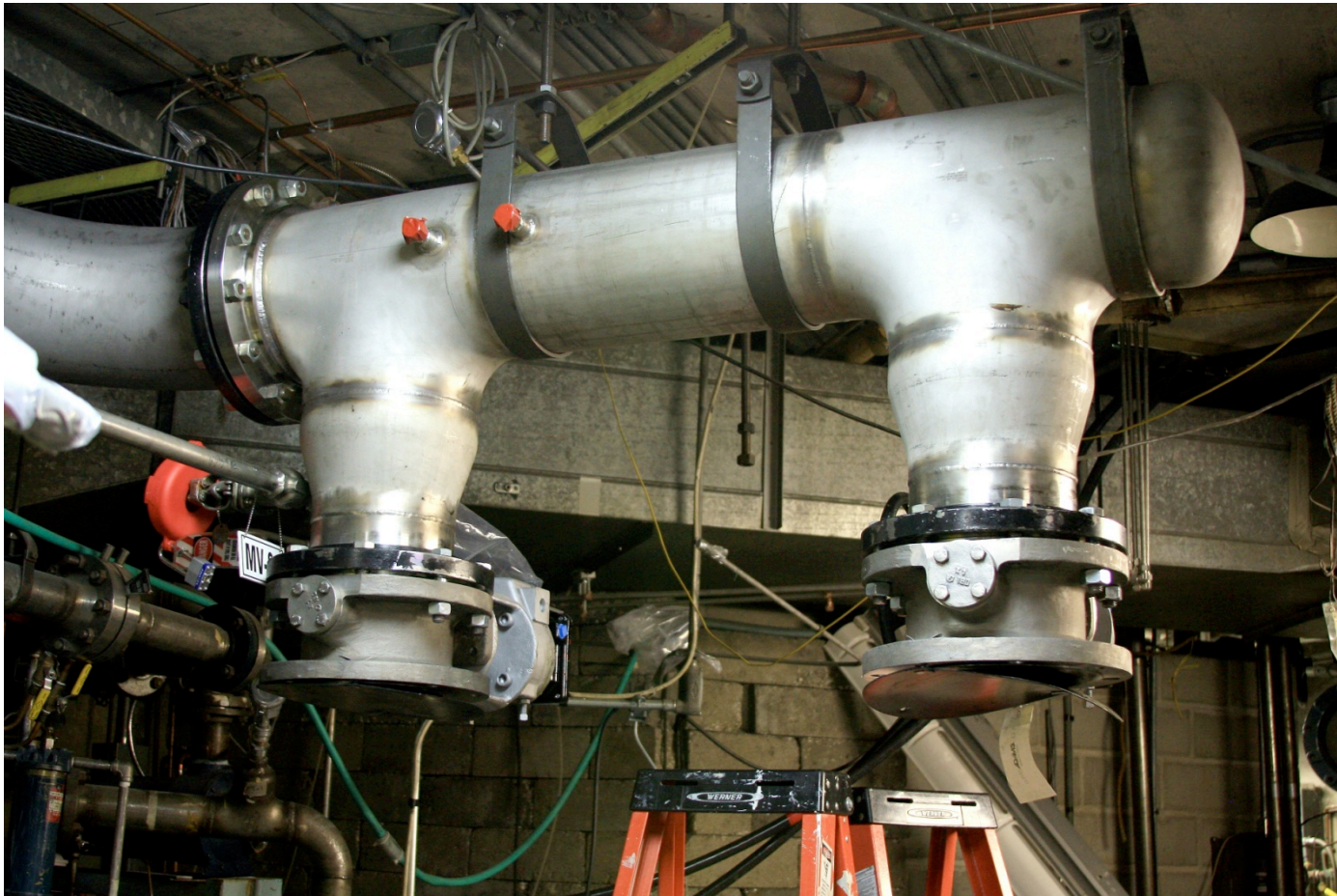
Construction Phase



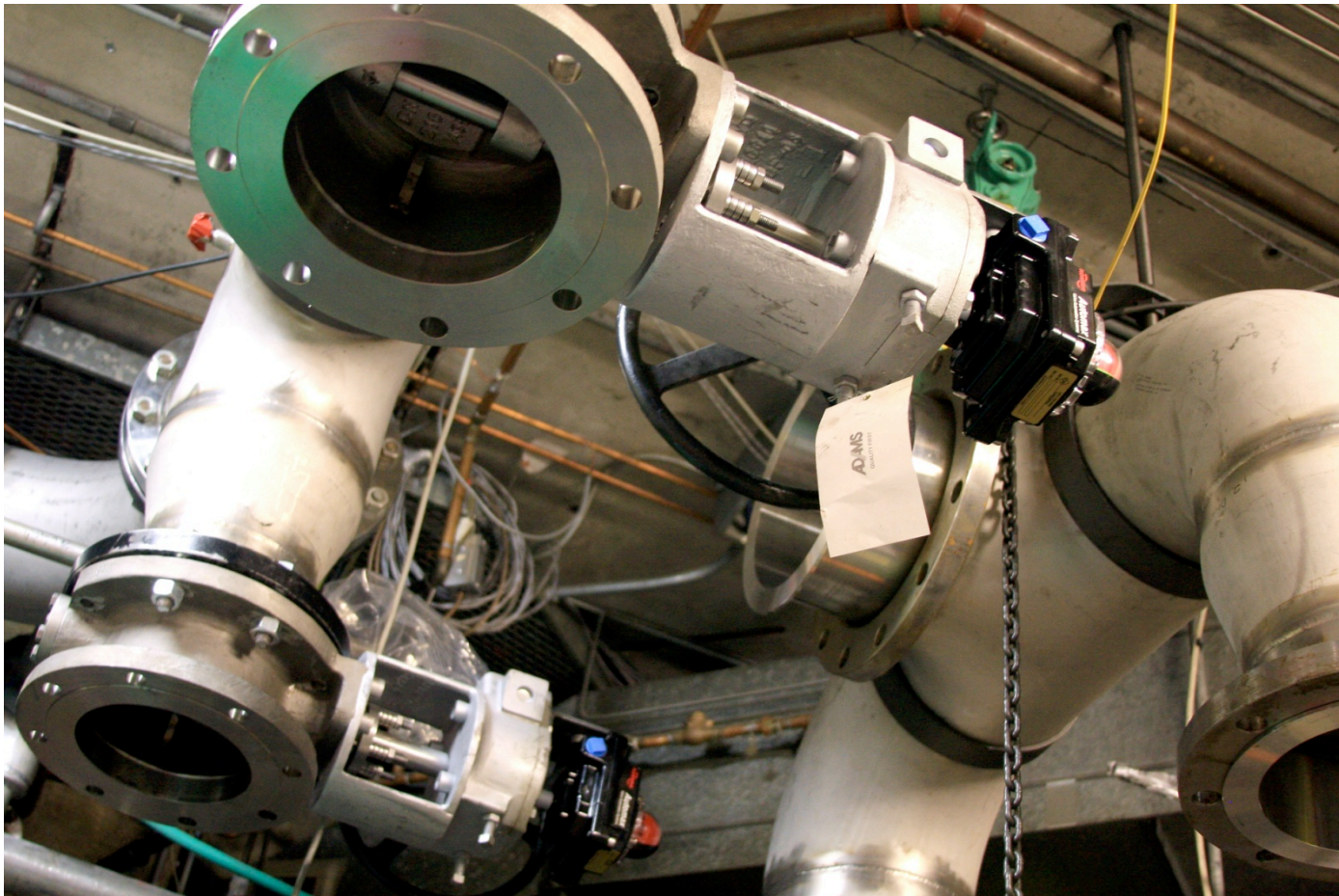
[Construction Phase]



Construction Phase



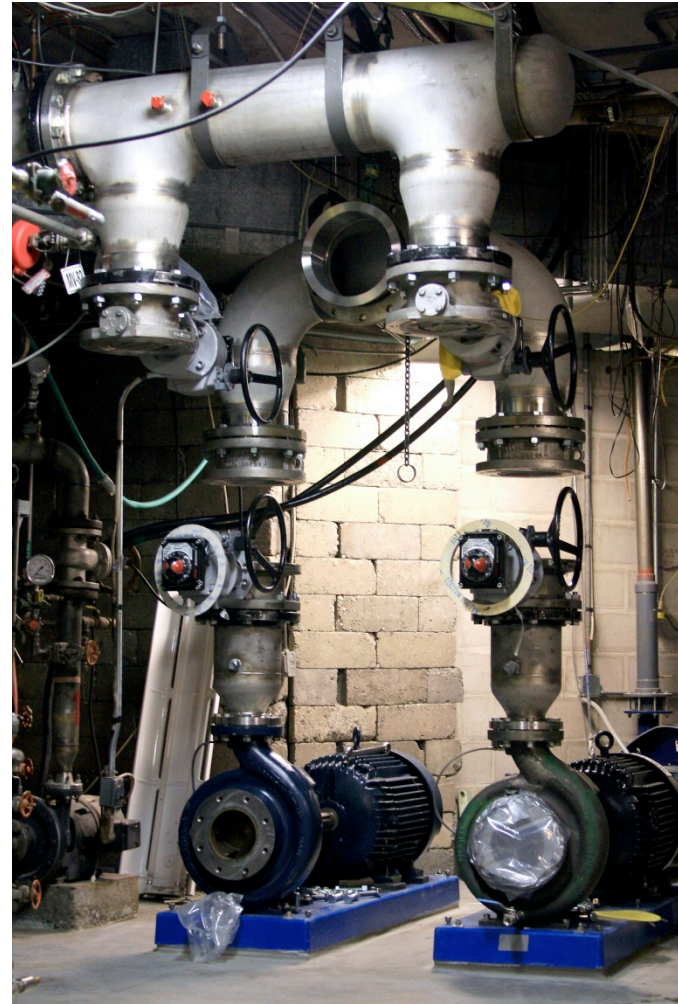
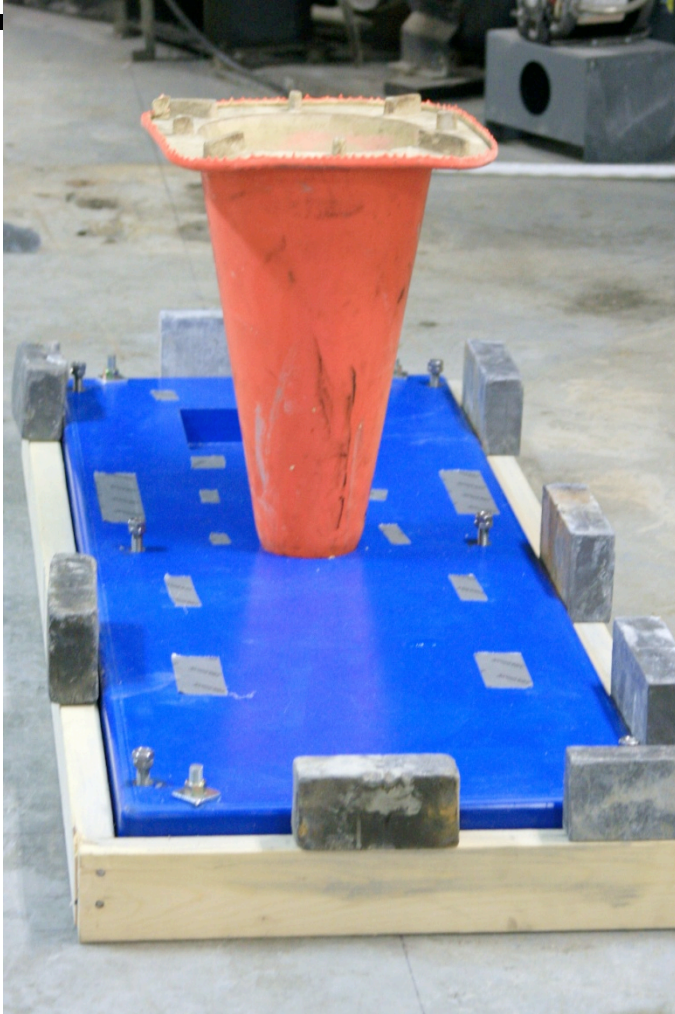
Construction Phase



Construction Phase



Construction Phase



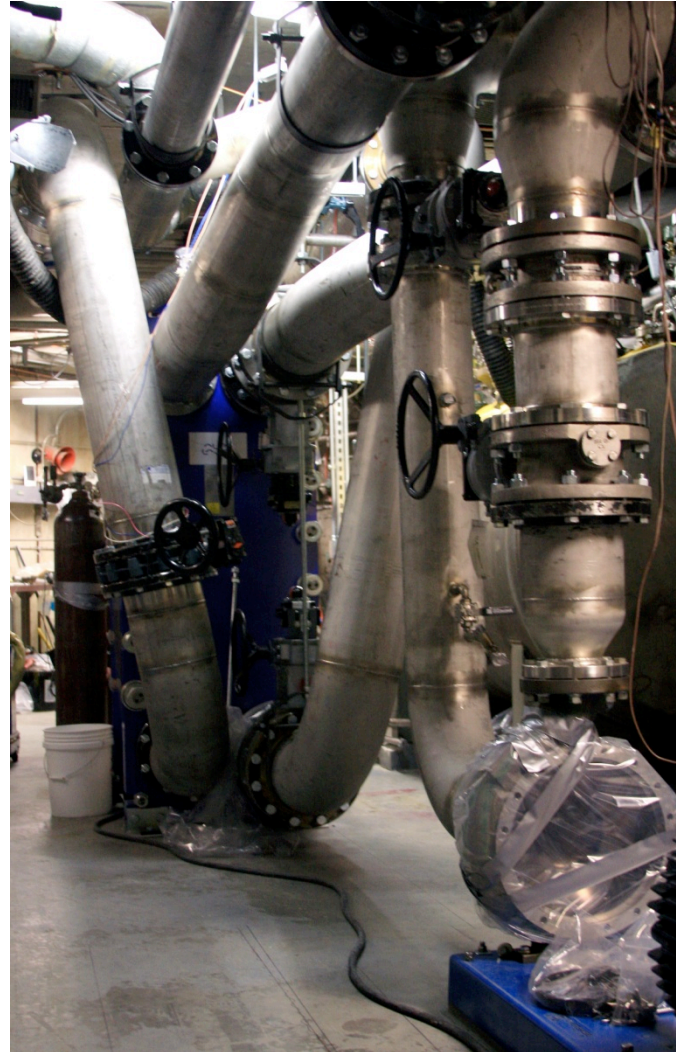
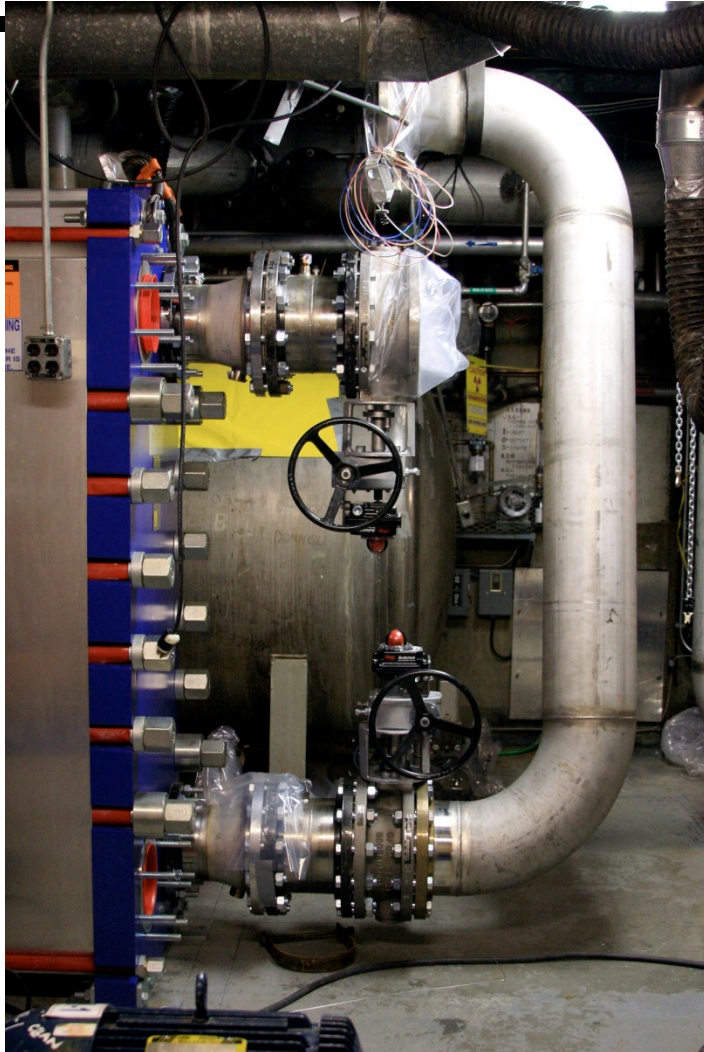
Construction Phase



Construction Phase



Construction Phase



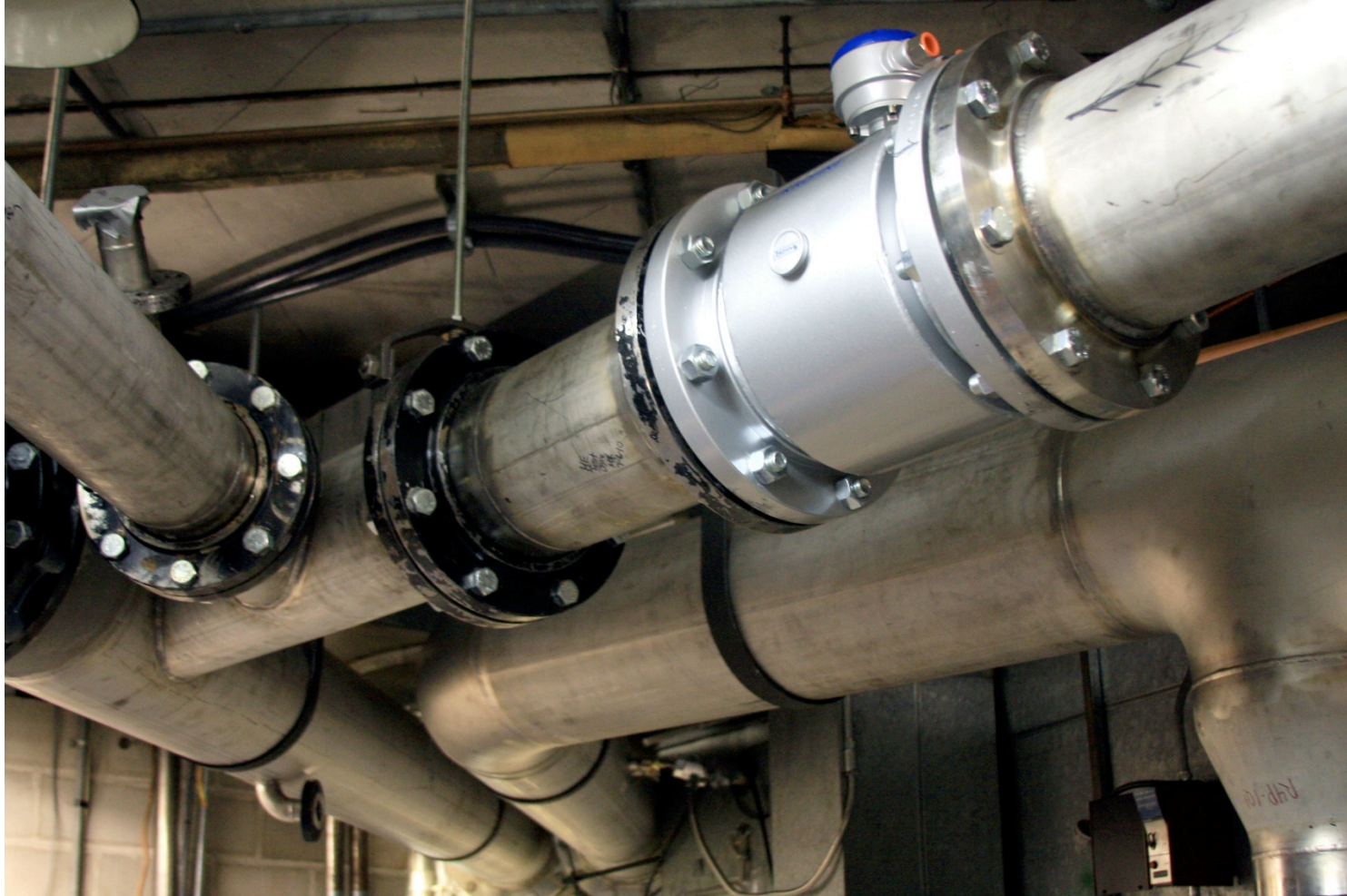
Construction Phase



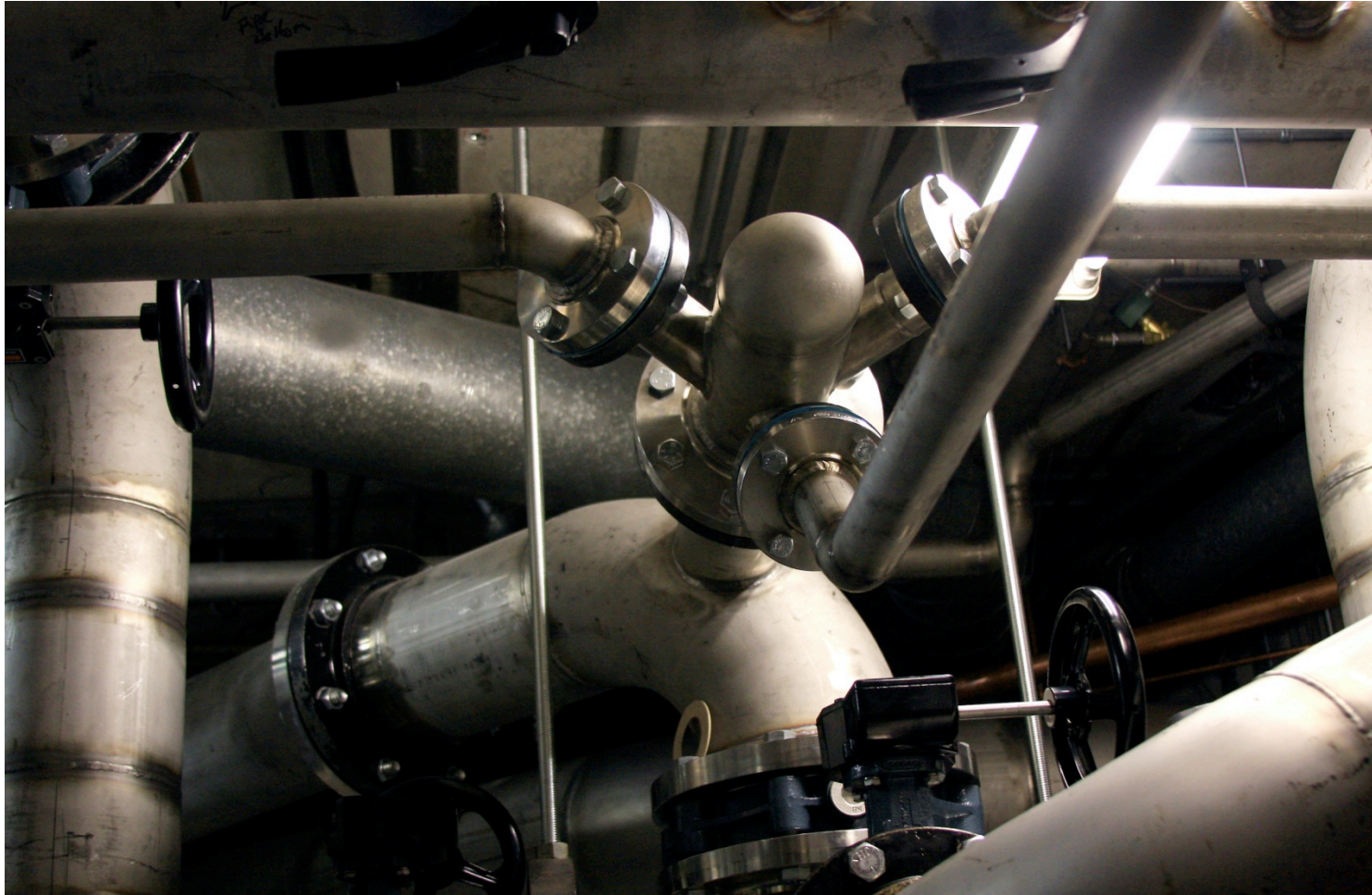
Construction Phase



Construction Phase



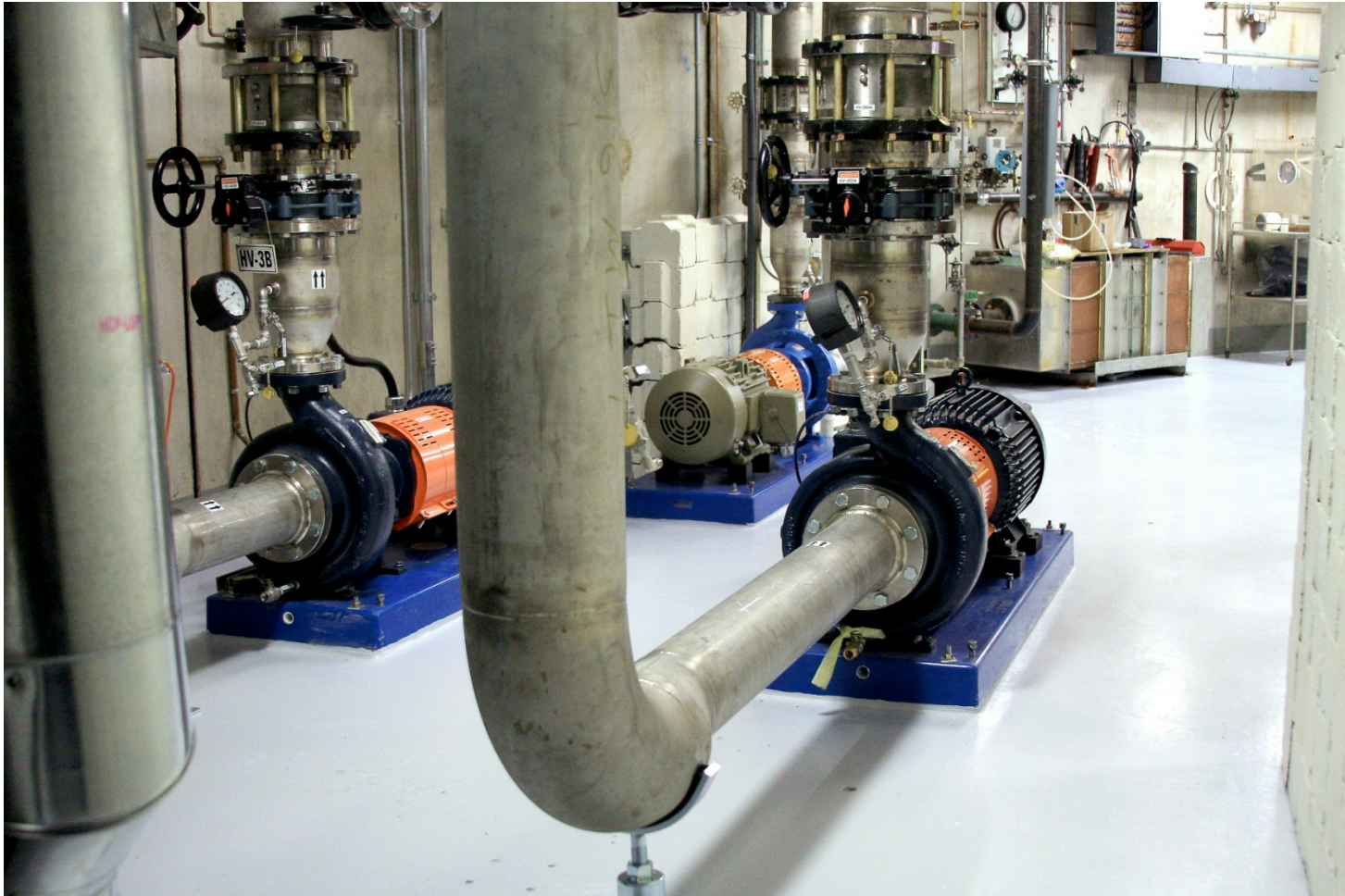
Construction Phase



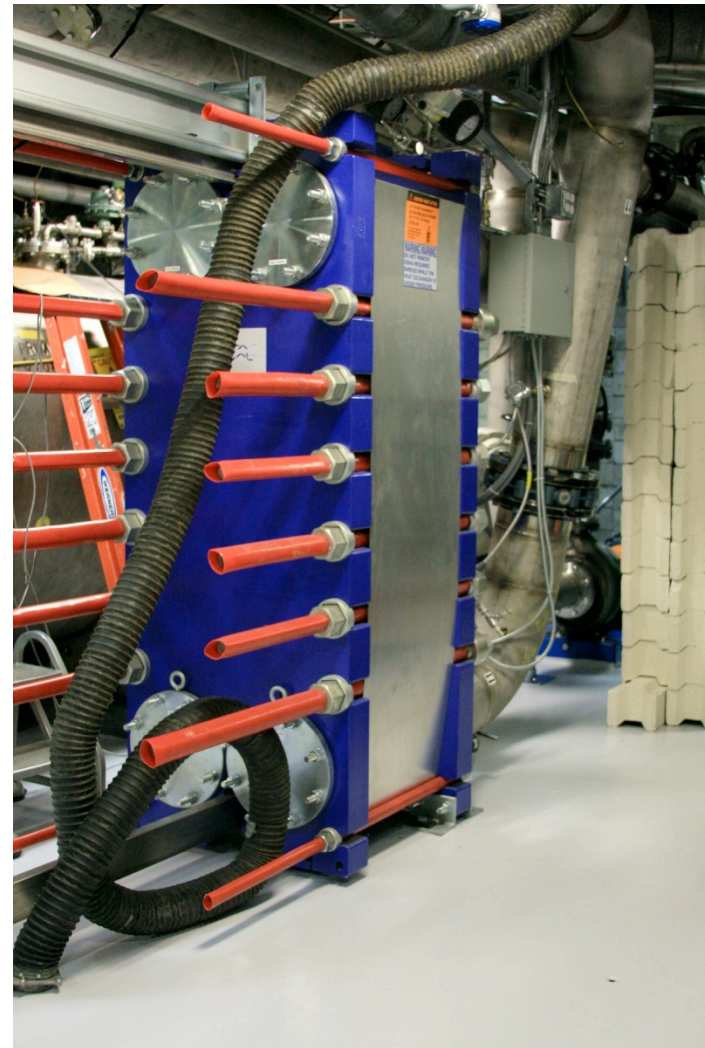
Construction Phase



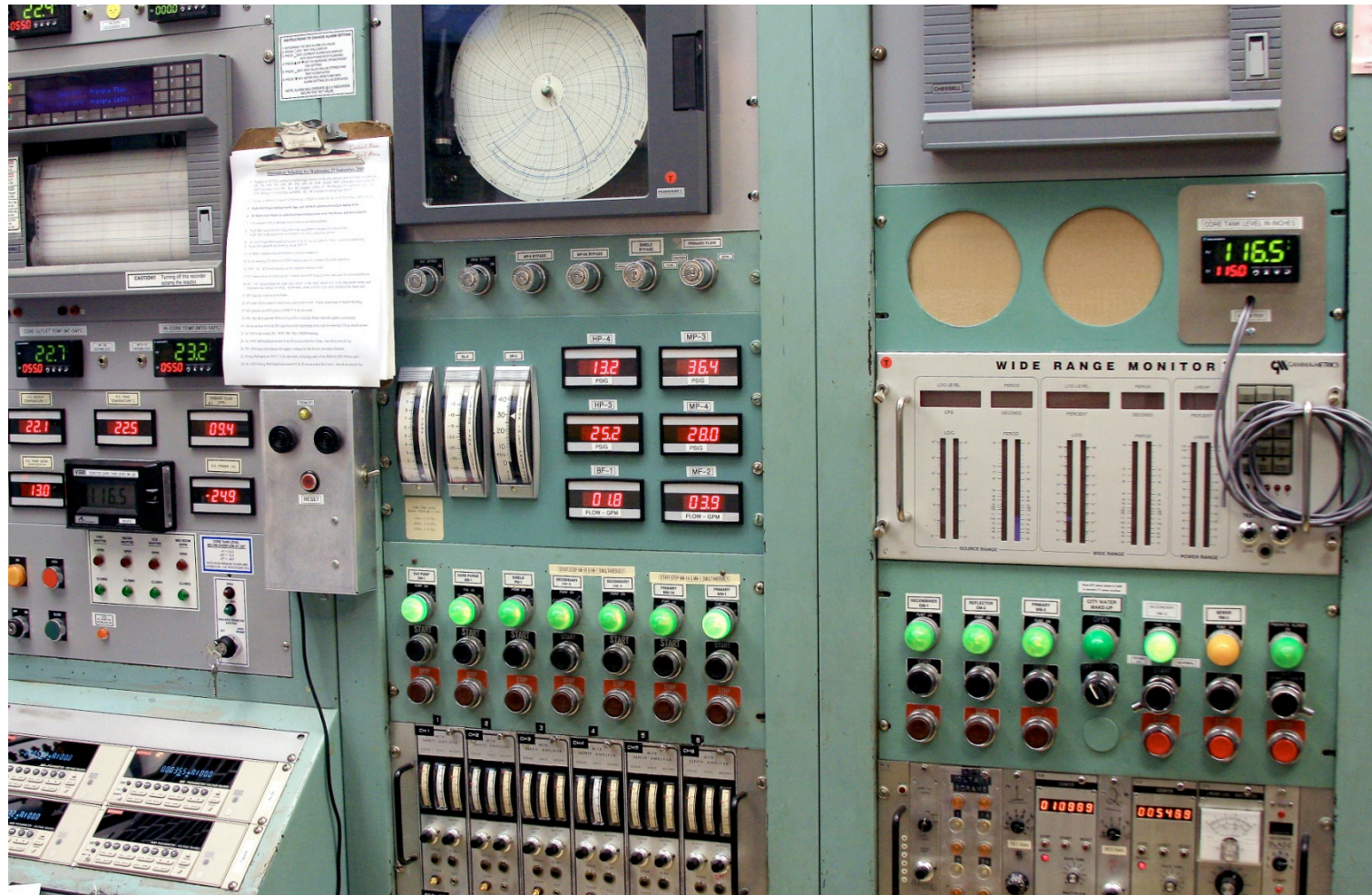
Recovery Phase



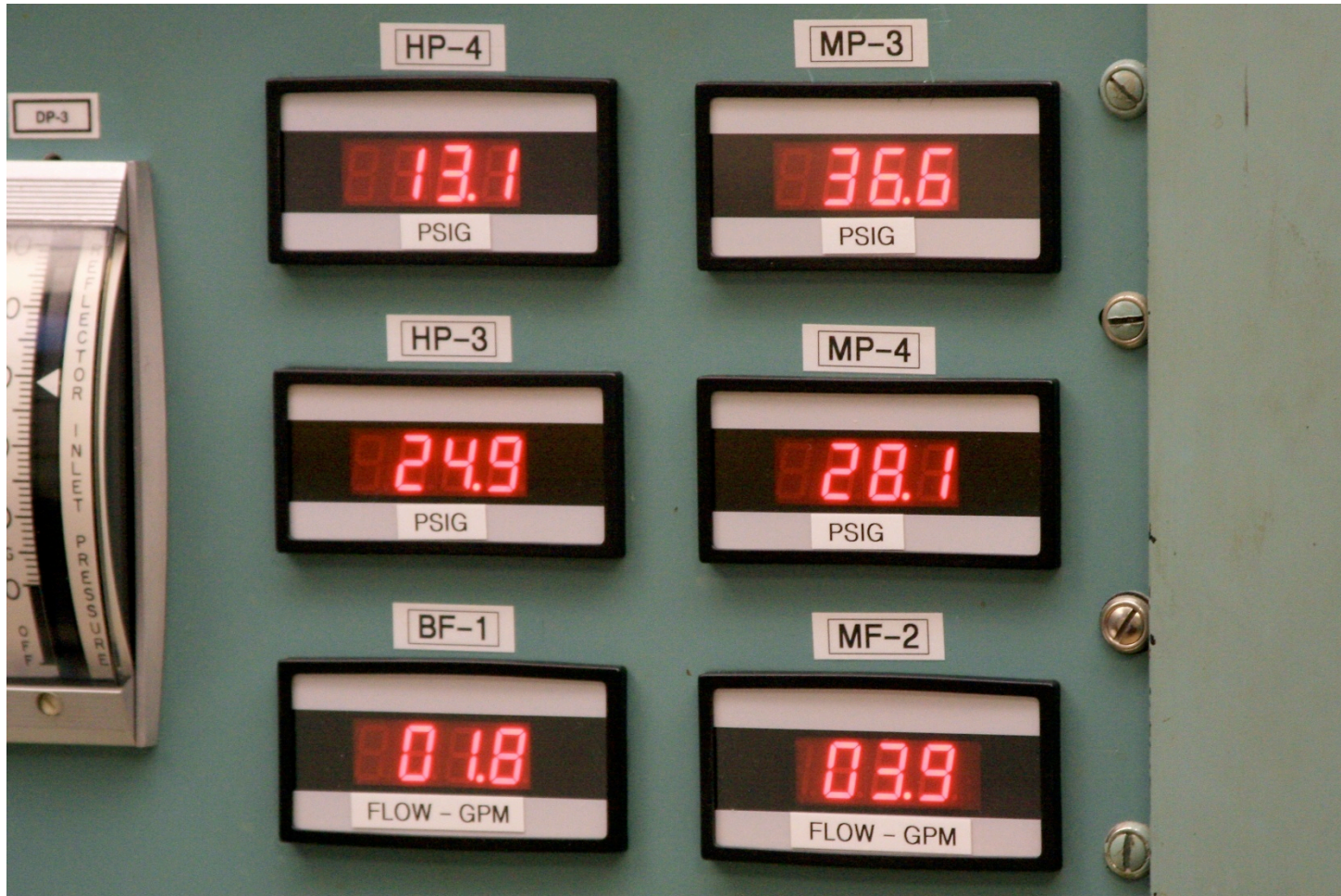
Recovery Phase



Startup Testing



Startup Testing



Return to Power



Summary & Conclusions

- Shutdown for outage on Friday 23 April 2010
- Demolition phase started 3 May
- Piping assembly started 7 June
- Piping assembly concluded on 20 August
- Instrumentation completed on 10 September
- Testing period 23 August – 14 September
- Personnel training 10 September – 15 September
- Raised power to 4 MW
on the afternoon of Friday 17 September 2010

Summary & Conclusions

- Questions & Answers
- Contact Info:

Edward S. Lau
138 Albany Street, NW12-116
Cambridge, MA 02139

617-253-4211
eslau@mit.edu