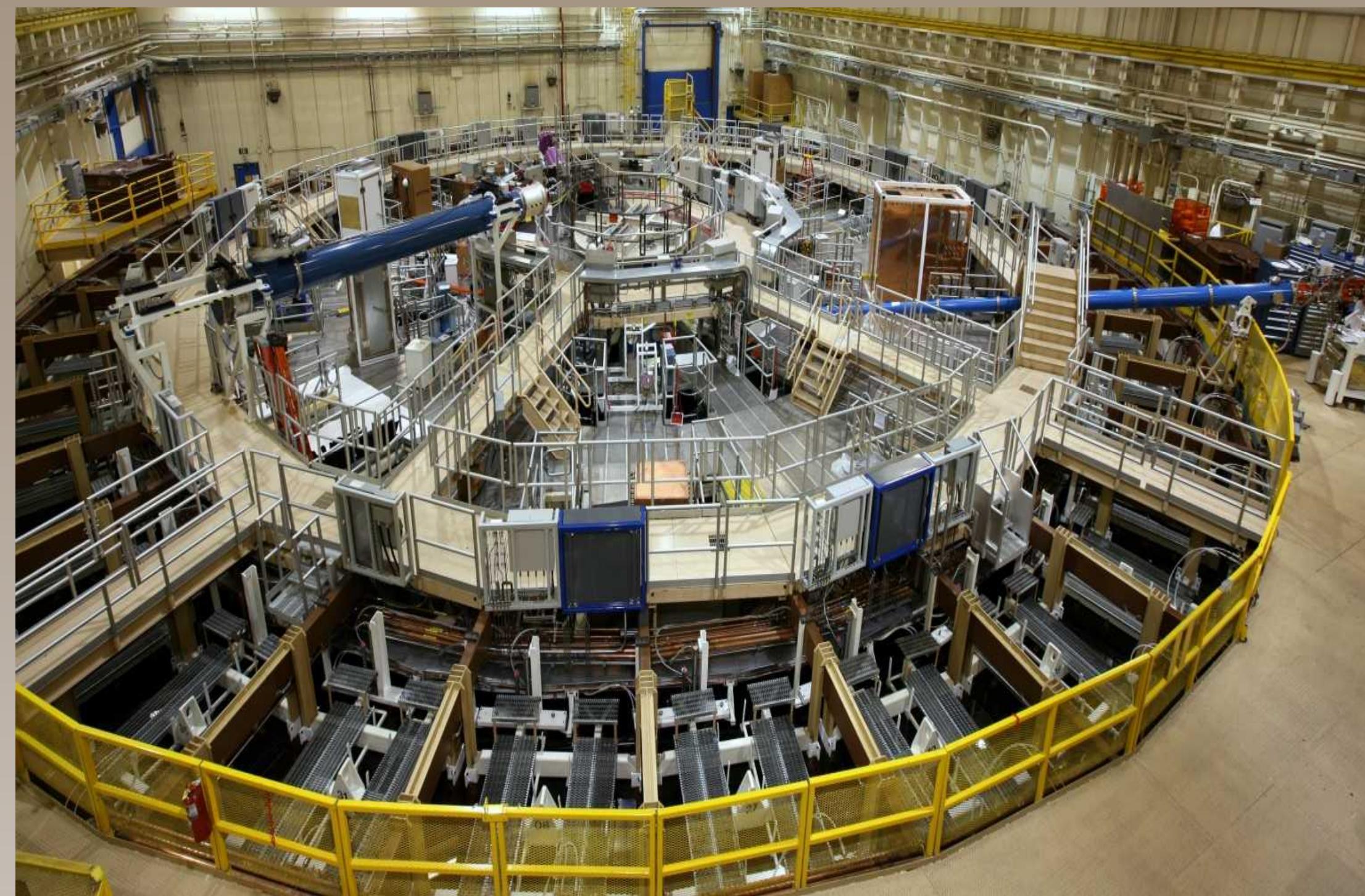


Exceptional service in the national interest



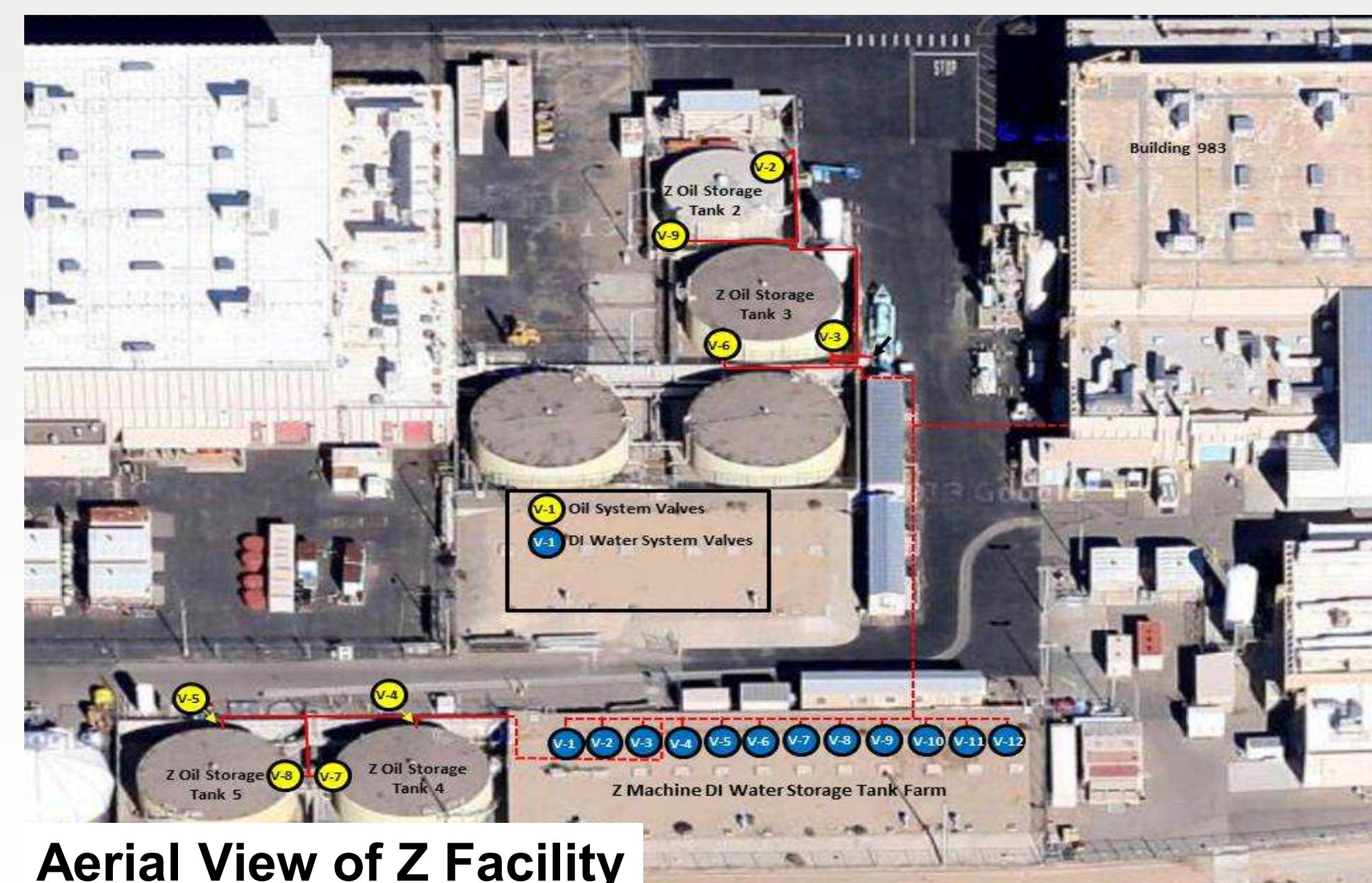
Z Machine's Facilities

Facilities Team Supports Every Shot



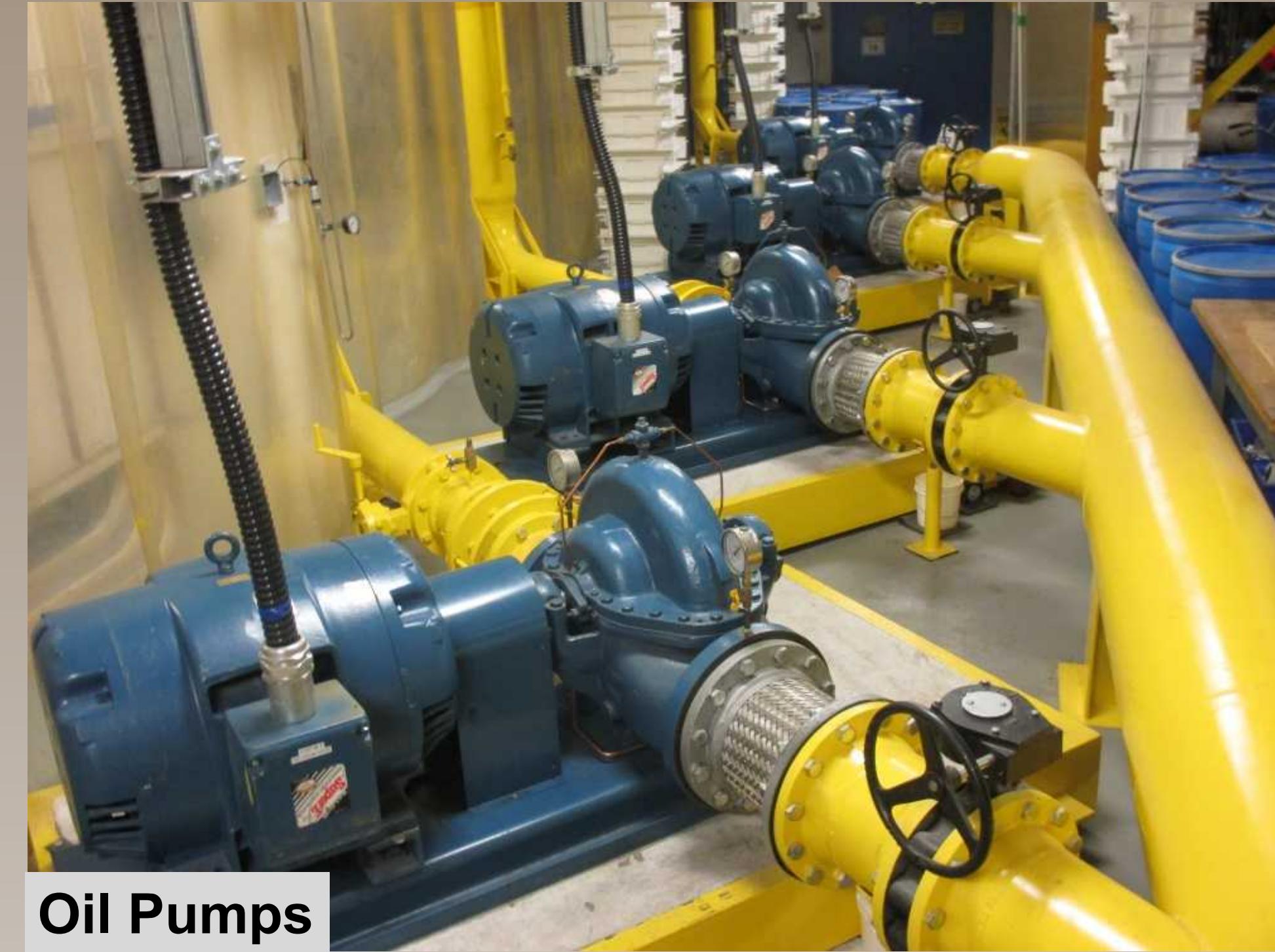
- The Z facilities team is a highly trained and dedicated group of individuals that assure that the Z machine has the required insulating resources in place to conduct an experiment every day.
- They operate and maintain the critical infrastructure that moves the insulating oil, de-ionized water, and SF6 gas into and out of the machine daily to rigorous schedules.
- The team's domain spreads over 8 acres and includes four 250,000 gallon oil storage tanks, twelve 50,000 de-ionized water storage tanks, a nine tube Sulfur Hexafluoride (SF6) gas storage system, a gas house, two levels of pumps, filters, resin beds, and control consoles below the Z machine, and the Z machine itself.
- The team utilizes multiple testing processes to assure that the fluids and gases meet rigorous performance requirements which allow the Z machine to perform as required.
- The team members are the first to arrive in the morning and usually the last to leave every evening.....we thank them for their dedication and exceptional service in the national interest.

Scott Lewis Don Petmeckey Eugene Ross Tom Schweitzer



Aerial View of Z Facility

Insulating Oil System



Oil Pumps



Facilities Control Panel

- The Z oil section holds 700,000 gallons of Diale AX insulating oil.
- There are 4 each 200 horse power oil pumps that have a pumping speed of 3,000 gallons per minute at 1800 rpm.
- It takes one hour and 10 minutes to transfer the oil into or out of the accelerator. The oil is constantly processed during business hours. The oil is filtered to 1 micron particle size.
- After the oil is processed the breakdown voltage is greater than 45kv in a 3mm gap with less than 35 parts per million of moisture
- The oil is stored in four 250,000 gallon storage tanks.

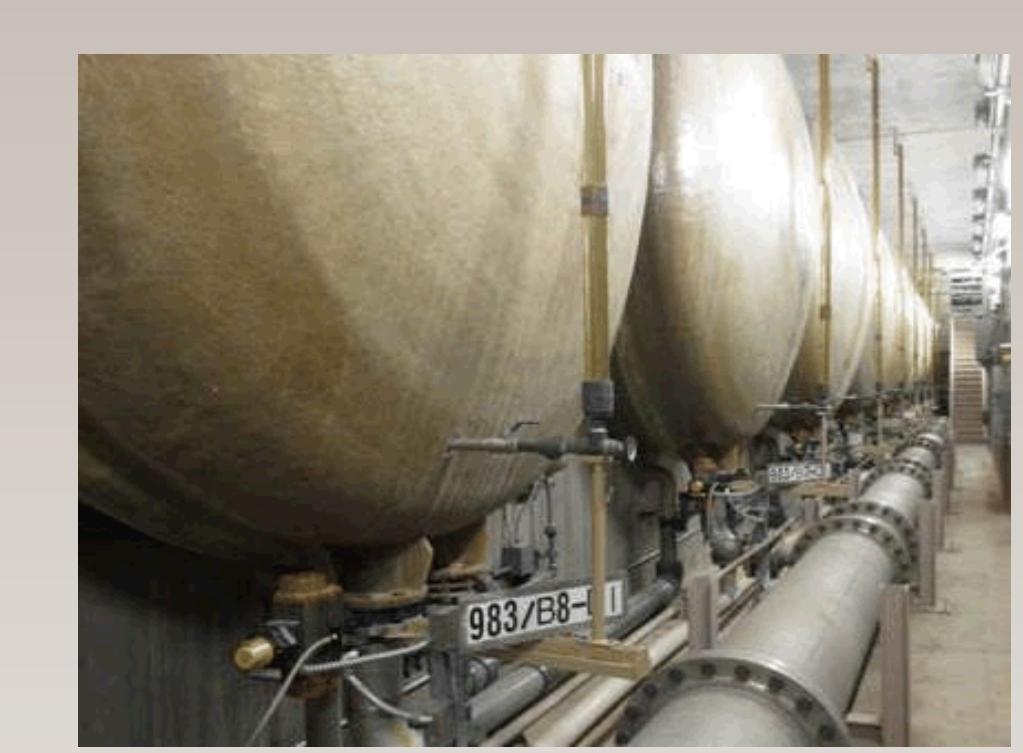


Oil Filters

De-Ionized Water System



DI Water Pumps



DI Water Storage Tanks

- The Z DI water section holds 350,000 gallons of de-ionized water.
- There are 3 each 50 horsepower water pumps that have a pumping speed of 3000 gallons per minute.
- It takes 35 to 40 minutes to transfer the water from storage tanks to the Z machine.
- The DI water is continuously processed through mixed resin beds to maintain a resistivity of 1.5 Mega-ohms or greater.
- The water also is degassed and will have dissolved gas content of less than 70%.
- The processed DI water is stored in twelve 50,000 gallon polyethylene tanks located underground.

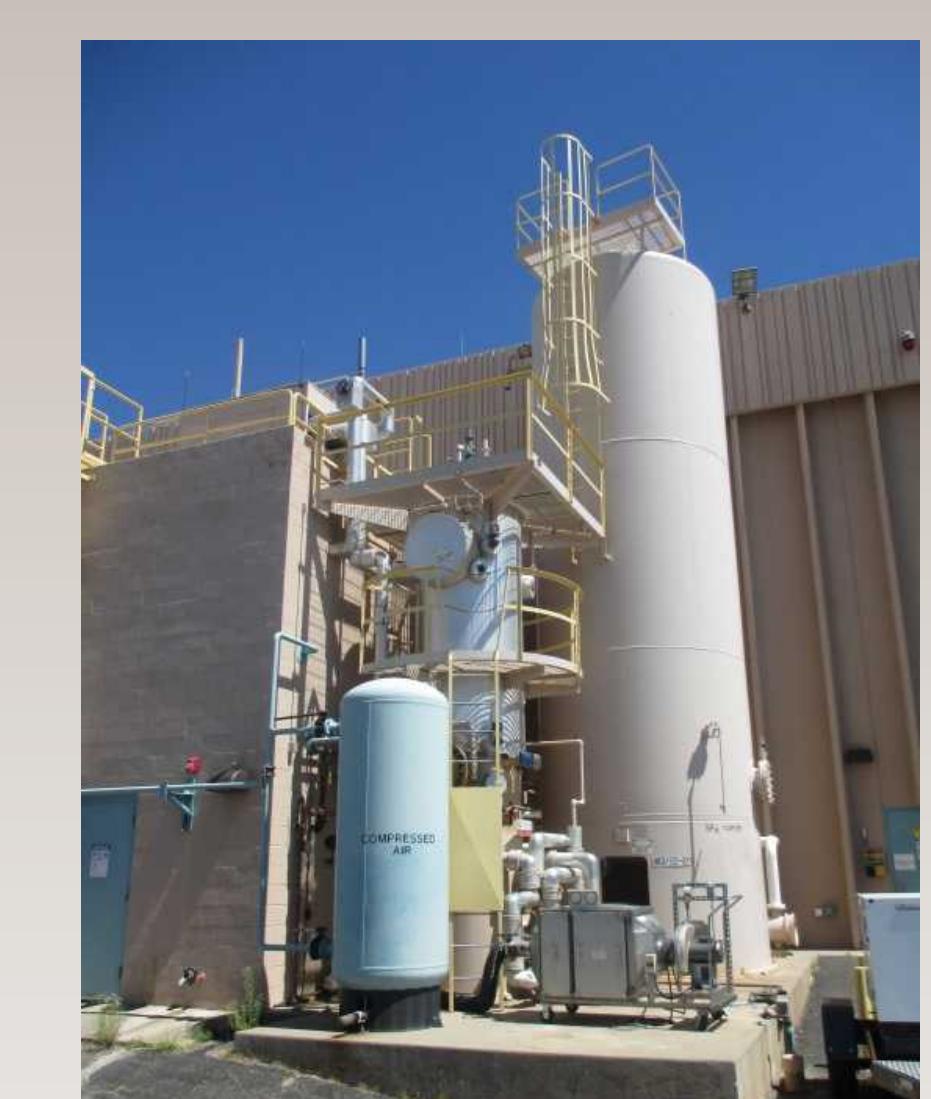


DI Resin Bed

SF6 Gas System

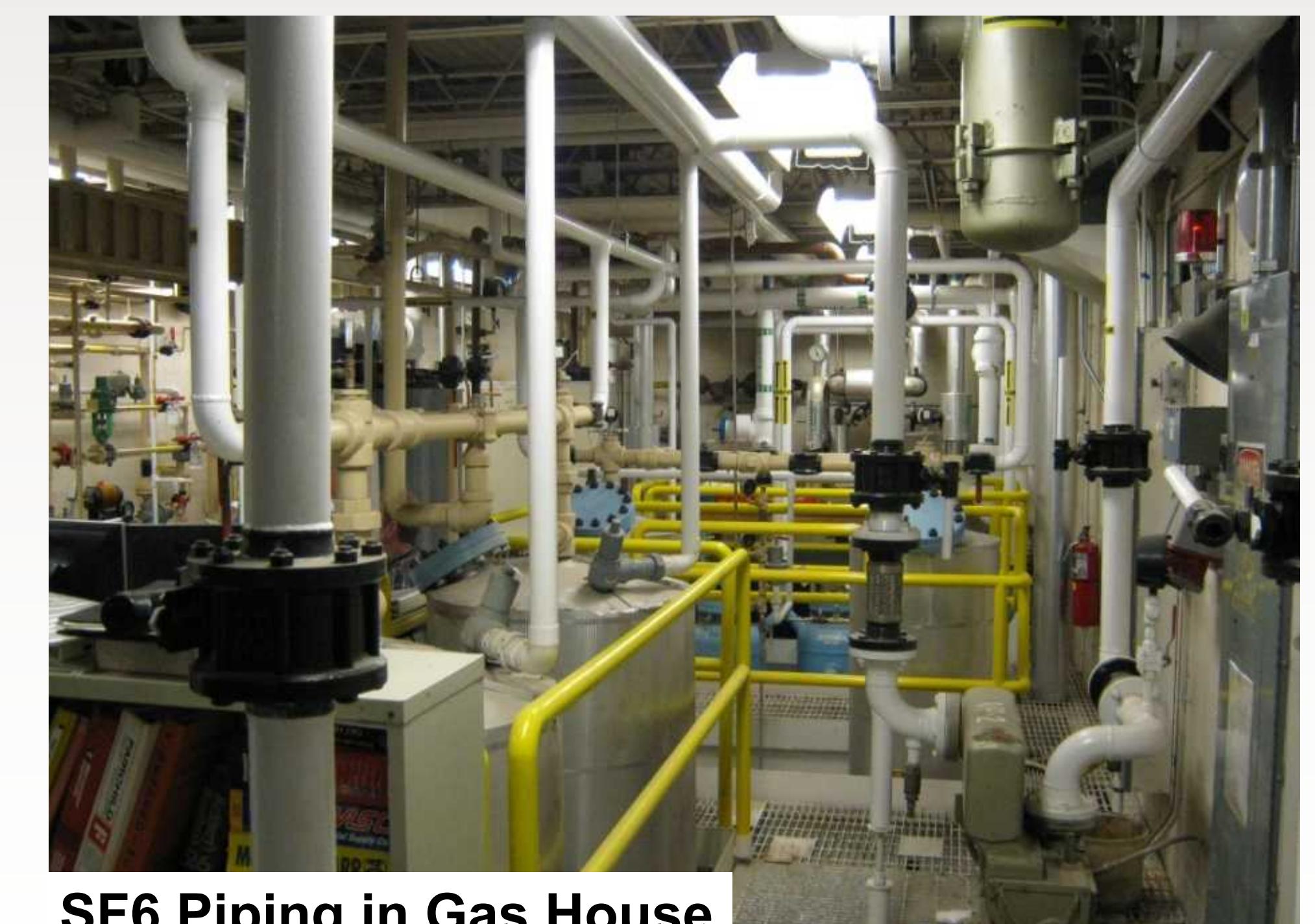


SF6 Control System



SF6 Storage Towers

- The SF6 gas system maintains ~2500 pounds of SF6 gas in the machine at all times. The gas is always processed and ready for use.
- The SF6 gas system has a remote storage facility capable of storing over 28,000 pounds of the gas .
- The gas is processed daily through filters, dryers and compressors to maintain the highest gas purity possible.
- The SF6 gas is stored and used in all phases, (gas, vapor and liquid) and the gas processing system processes the SF6 in all three of these phases.
- This gas is critical to the machines function and without it there could be no Z machine .



SF6 Piping in Gas House