

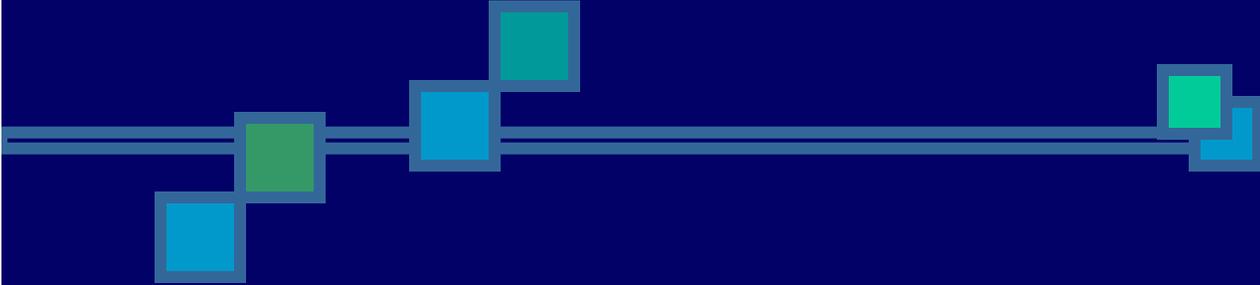
HDB8 Jumper Repair



299H

Brian Higby

WSRC



WORK SCOPE

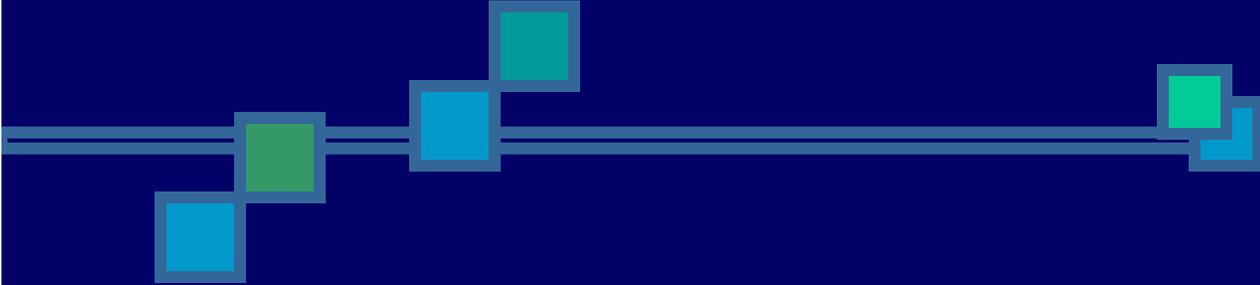
- Repair a critical HDB8 waste transfer jumper at the 299H Decon and Maintenance Facility
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299H Decon & Maintenance Facility

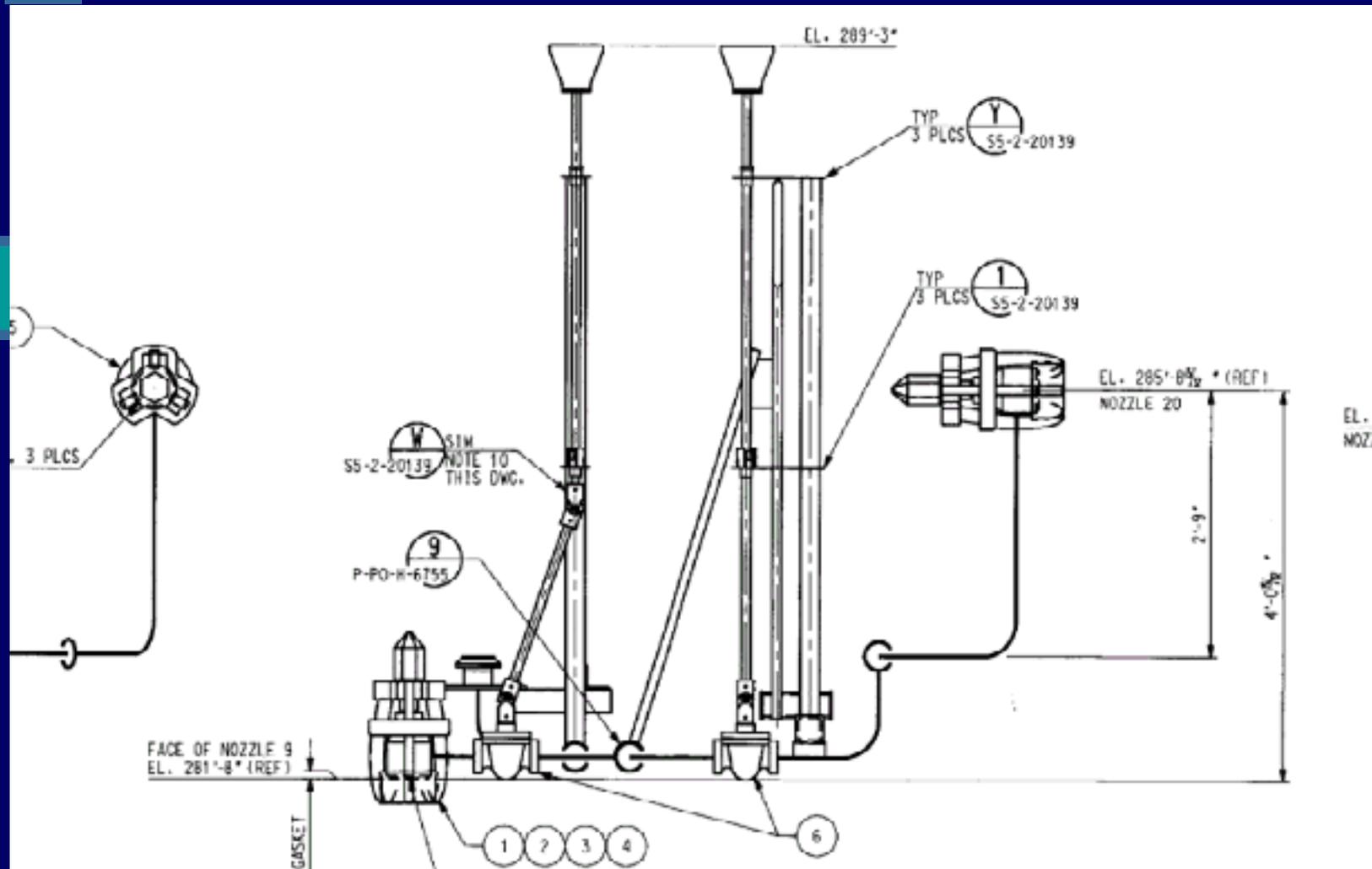
- Engineered ventilation system
 - Stainless steel lined Cells
 - Waste Collection system to contain liquids from the decontamination process
 - Breathing Air system for plastic suit work
 - Nitric Acid and Steam Cleaning decontamination systems
 - In-Cell Crane
 - (2) Remote Cameras
 - Welding Equipment
 - Work is performed "Hands-On"
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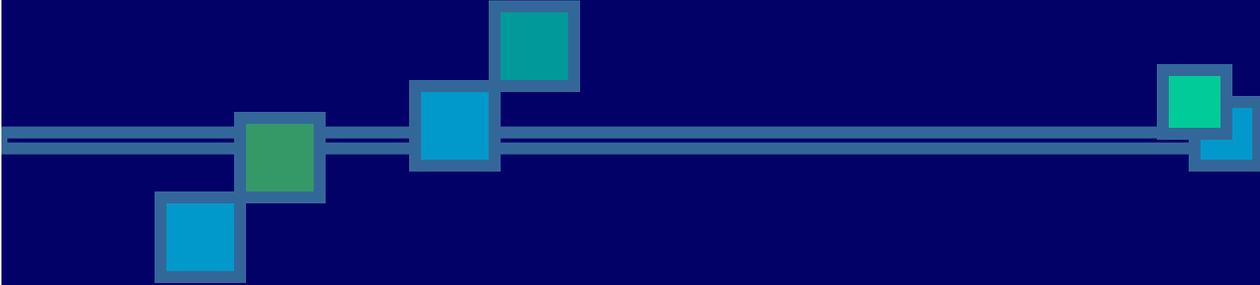


Facility Limiting Conditions

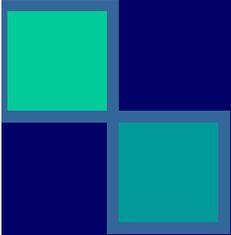
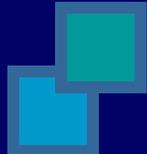
- An area steam outage was in progress
 - Steam cleaning decon system could not be used
 - Nitric Acid system decon had to be limited since the waste collection tank was 2/3 full and the only means of emptying the tank was transferring with a steam jet
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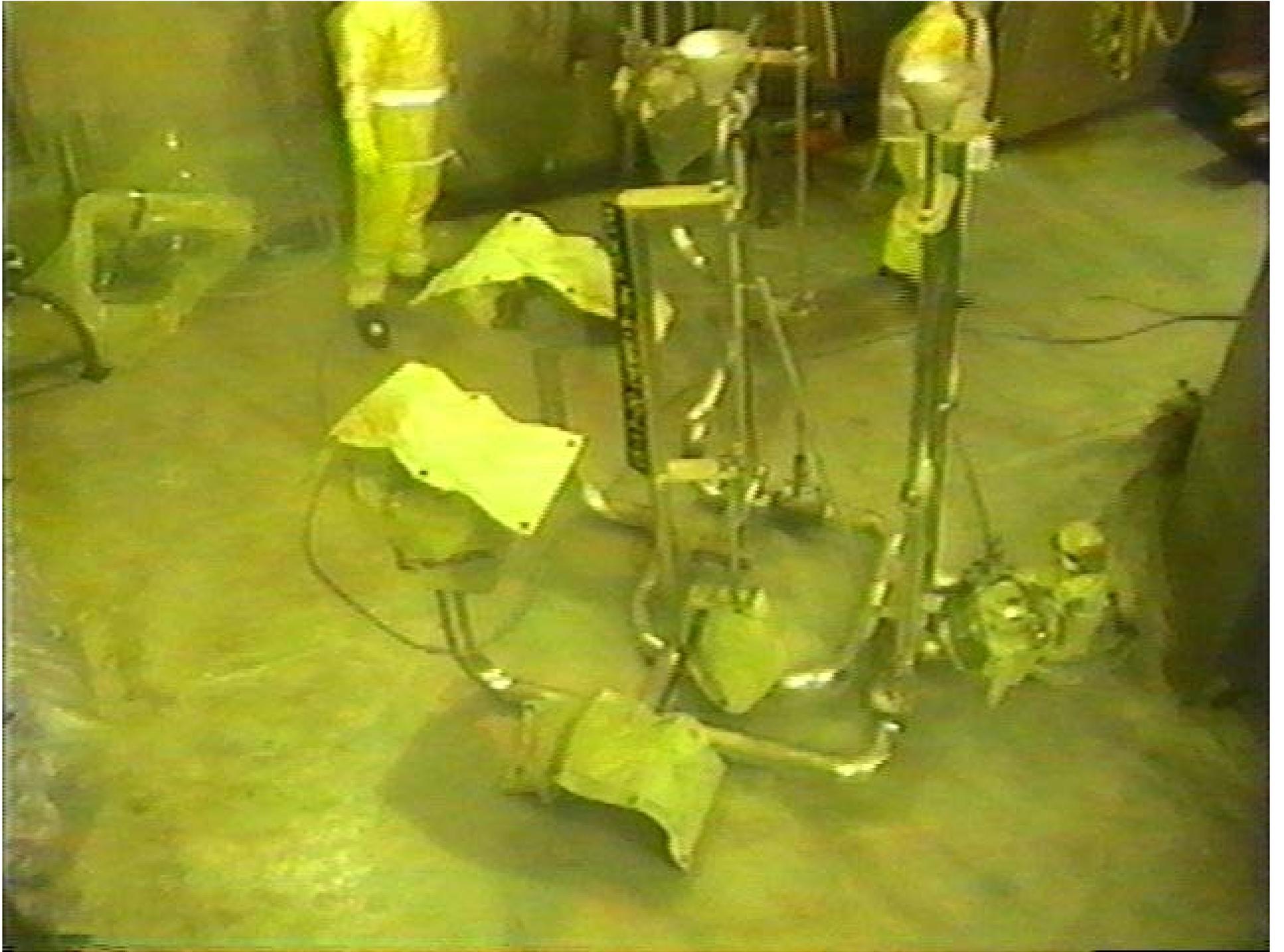
HDB8 Jumper Drawing

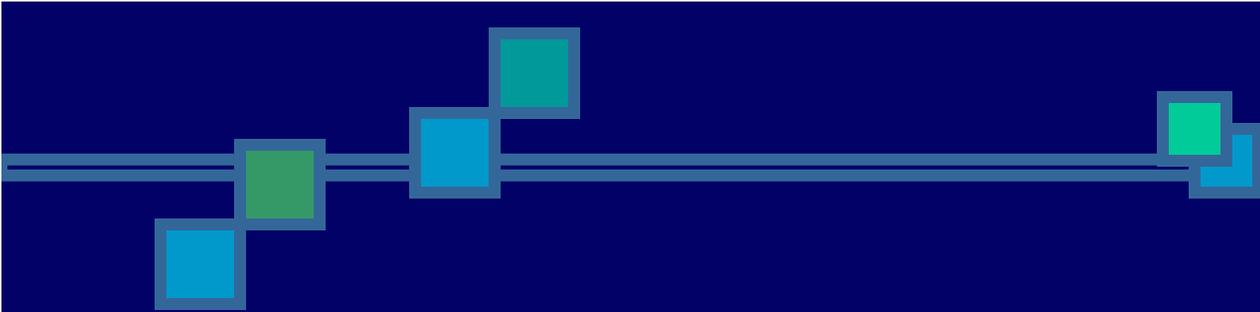




Existing Jumper Condition

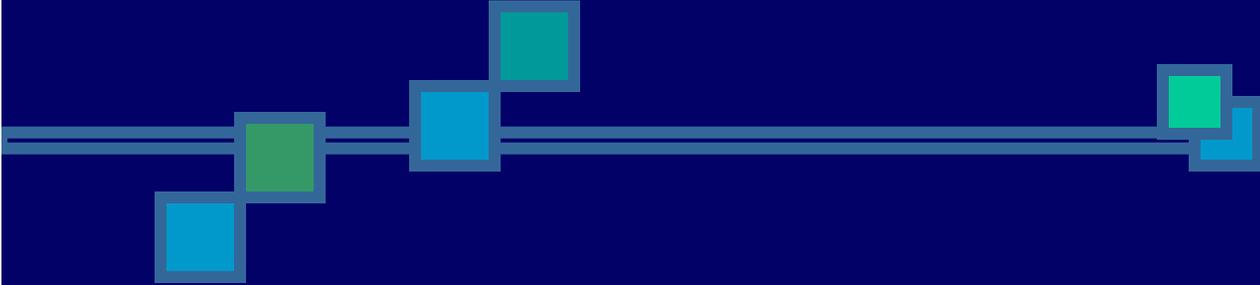
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- (1) of the (4) valves was no longer operable - it had been difficult to operate for several years
 - The valve operator extension handle was damaged at (1) of the universal joints
 - Radioactive waste had been transferred through the jumper for approximately (10) years – the Jumper was flushed with flushwater prior to removal for repair
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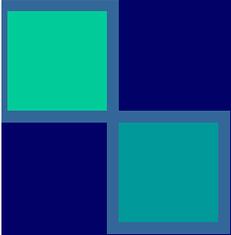
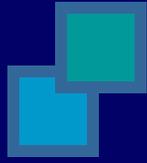


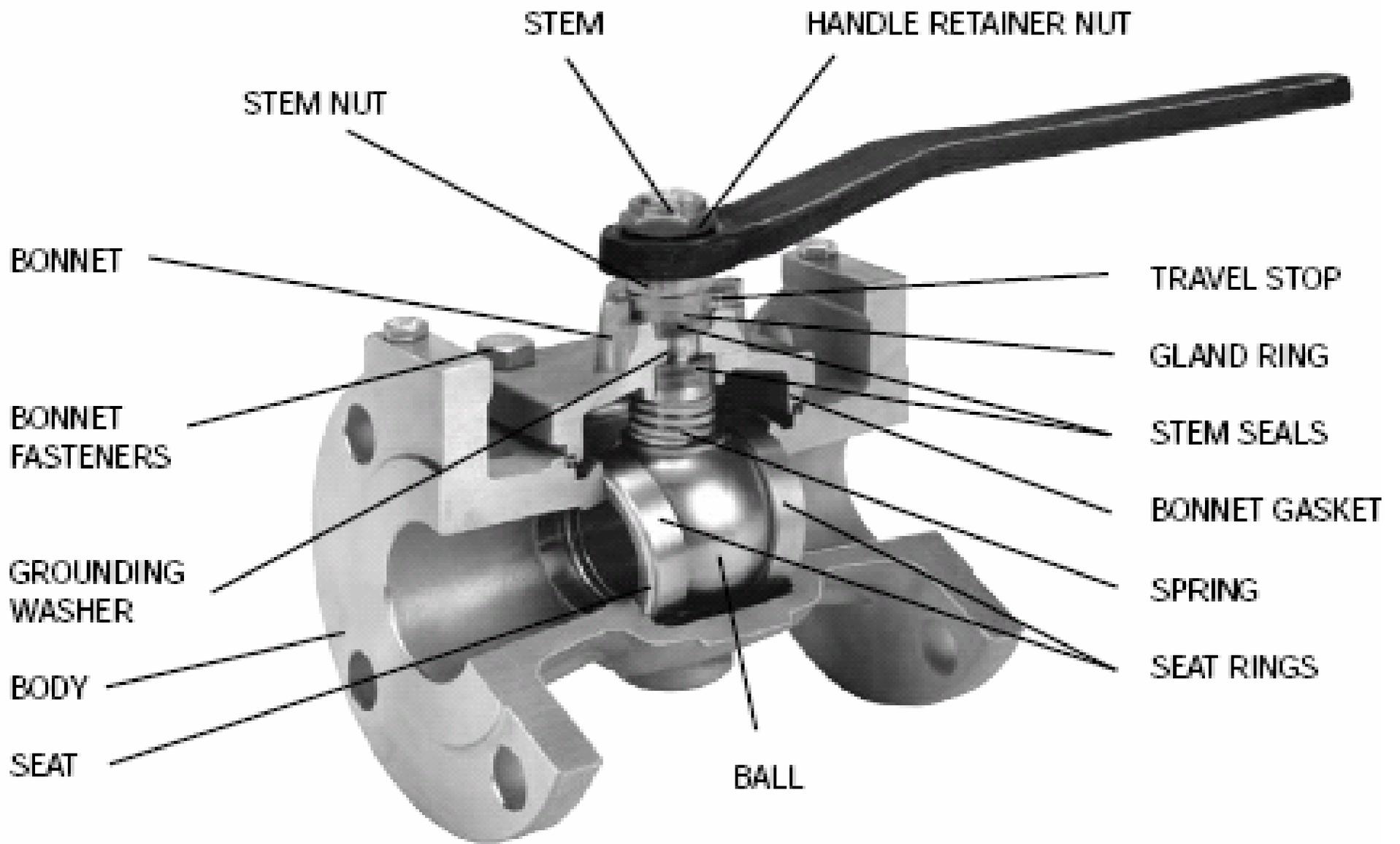
Goal

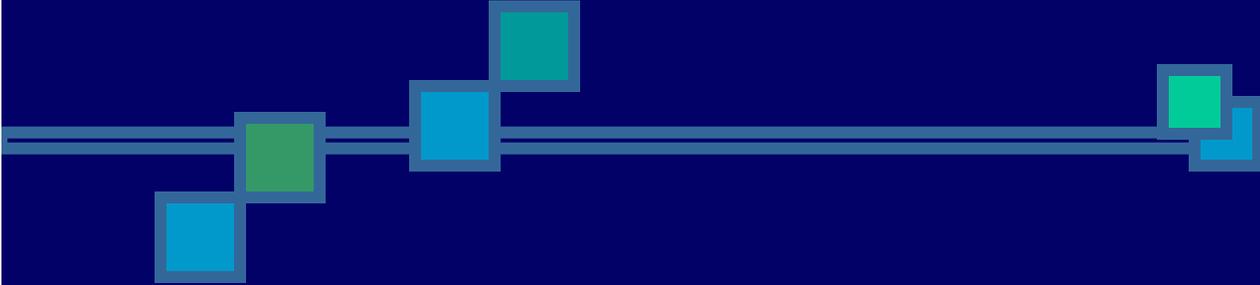
- Perform the work and return the Jumper to the customer in (3) work shifts
 - Maintain the mechanics' exposure as low as reasonably achievable within the schedule restraints
 - Perform the work without an injury, contamination case, or overexposure
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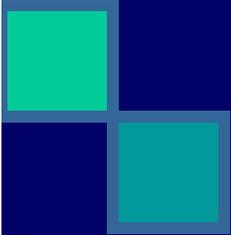
PRESTAGING & PREFAB

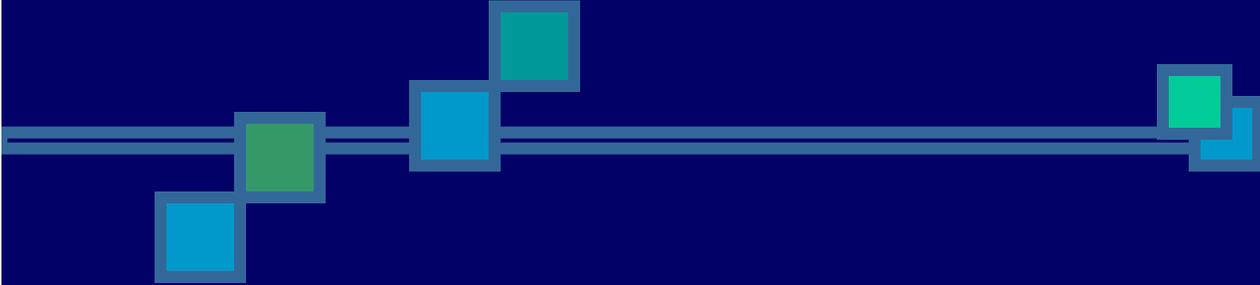
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- New valve kits including bonnets, stems, seats, and packing were procured
 - The valve kits were preassembled in a clean shop
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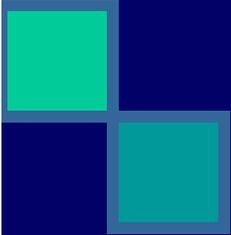
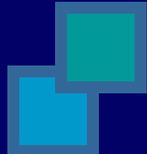


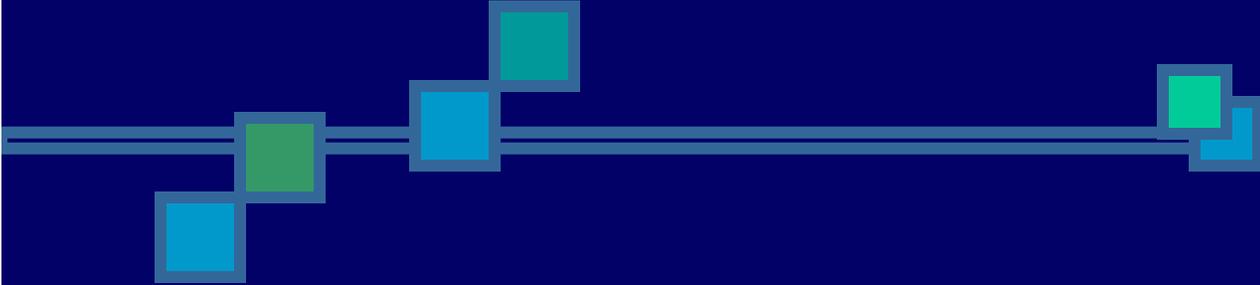
Mockup

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- A clean valve welded in a pipe spool was staged in the Maintenance Shop
 - Mechanics and QA Inspectors practiced disassembly/reassembly
 - The containment bag for the return shipment of the Jumper was installed on a clean hoist to simulate installation in the contamination area
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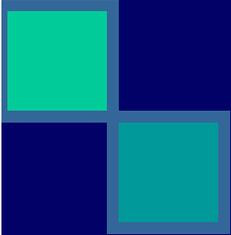
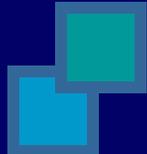


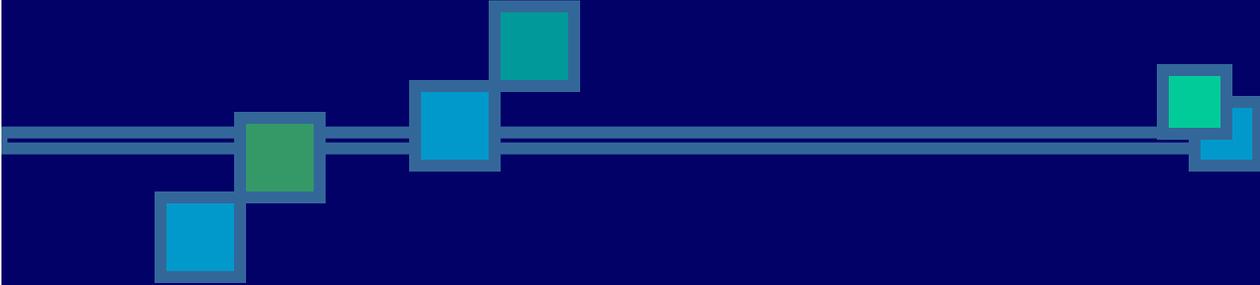
PRESTAGING & PREFAB

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- New universals and valve shafts were procured and machined for the valve handles
 - A portable Acid Flushing system was assembled and tested in a clean area
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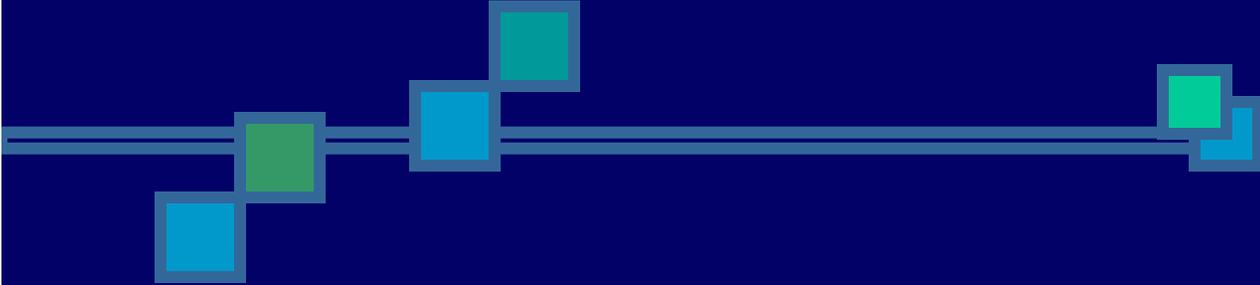
Portable Acid Flushing Unit

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- Portable $\frac{3}{4}$ HP 110V self-priming centrifugal pump
 - 55 gallon stainless steel drum
 - Connector blinds with pipe nipples
 - PVC/nylon reinforced hose
 - 50% Nitric Acid
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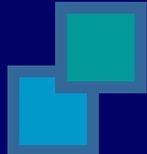


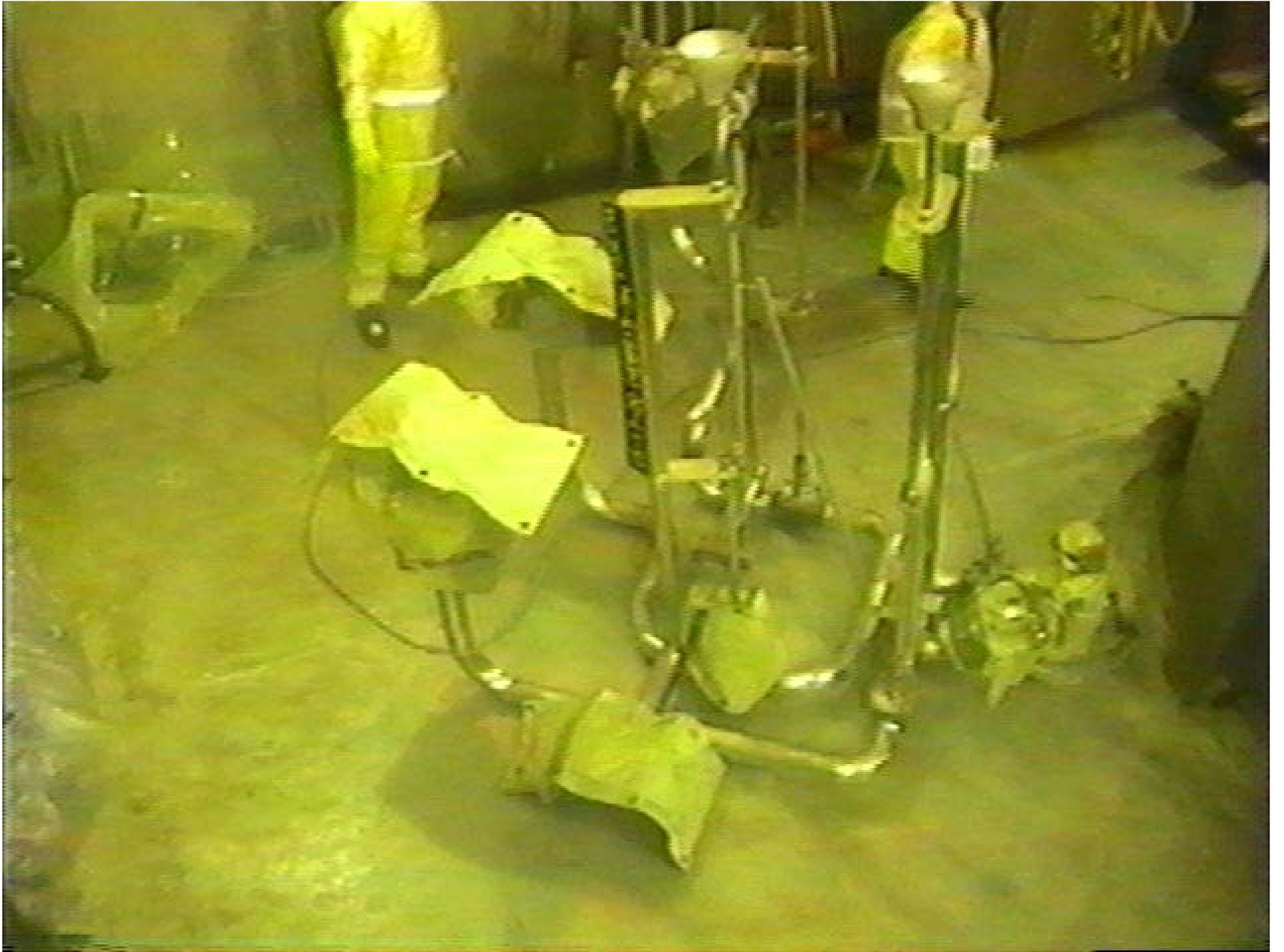
Decon Activities

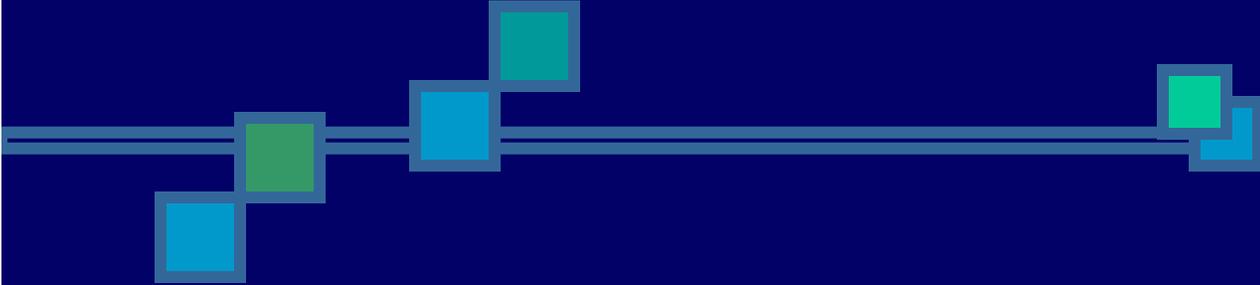
- Jumper gaskets were removed prior to flushing – lowered the whole body working rate from 100 mrem to 30 mrem at the connector nozzles
 - Acid flushing - lowered the whole body working rate from 1 Rem to 200 mrem at the valves
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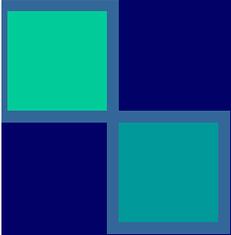
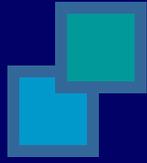
Shielding

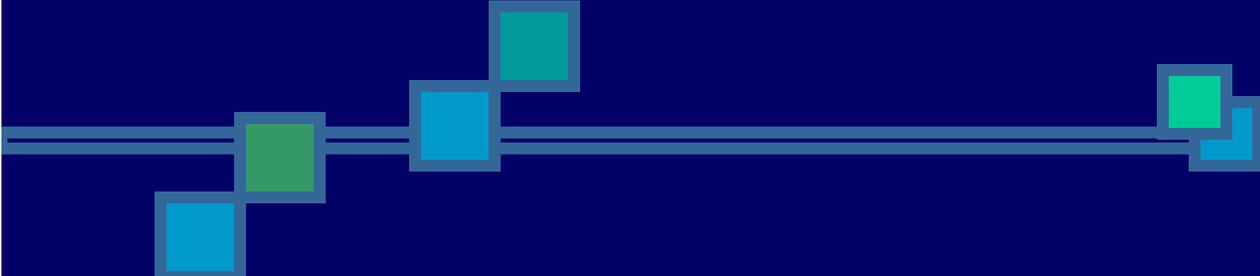
- Lead blankets were placed on each connector nozzle and each valve and were moved only for access
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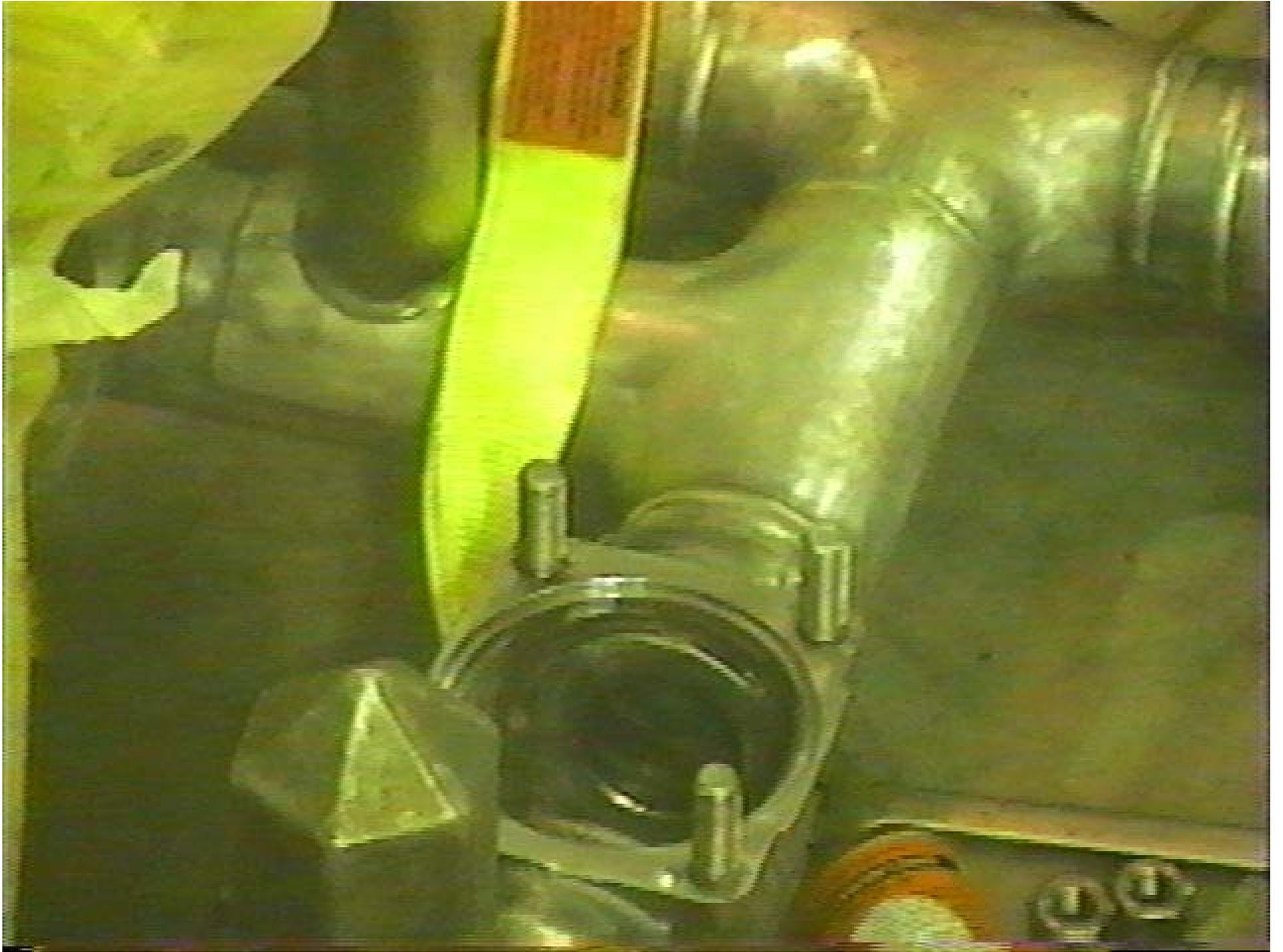
Work Execution

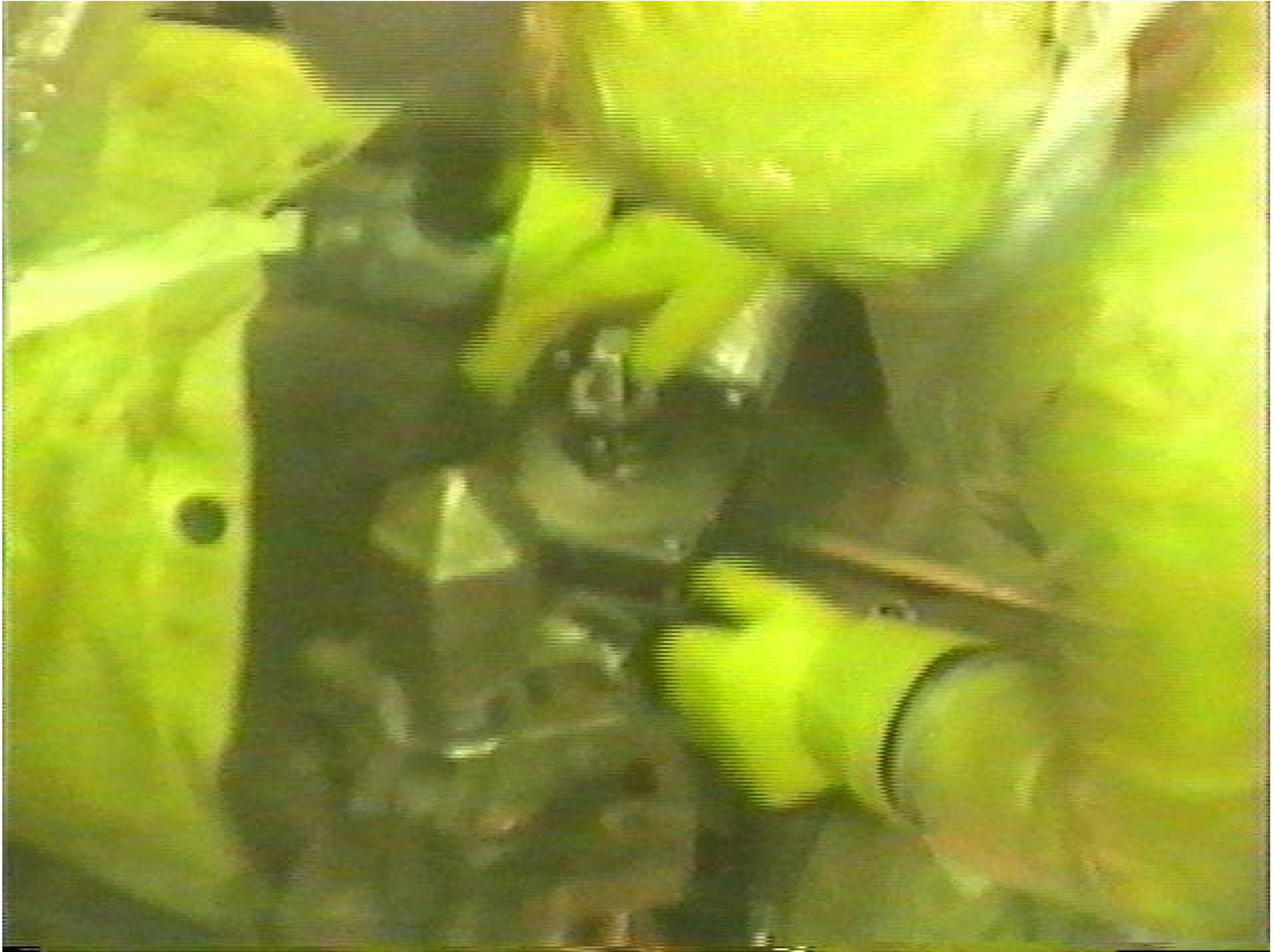
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- The work was performed efficiently and as planned.
 - A valve ball and valve handle extension rod pin were found to be damaged and had to be repaired in addition to the planned work.
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Good Radiological Work Practices

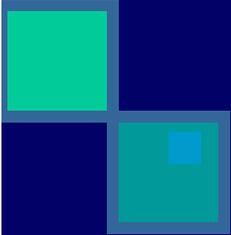
- Mechanics and Radcon moved to low dose area when not working on Jumper
 - Q.A. and welding inspections were performed from a clean area using the remote camera
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Total Job Exposure



Estimated exposure: 3.75 Man-rem

- Actual exposure: .946 Rem

- Highest Individual exposure: .160 Rem

