

ICP

IDAHO CLEANUP PROJECT

Decontamination and Decommissioning Overview/ Materials and Fuels Complex Pressure Excursion

Citizens Advisory Board Brief
March 14, 2012

Hoss Brown



SAFELY PLAN • MOTIVATE • DELIVER

D&D Accomplishments



- ◆ **Demolition of 218 (of 221) facilities and structures**
 - Over two million square feet of footprint reduction
 - Delivered one year ahead of schedule with \$307 million under budget
- ◆ **Includes four reactor facilities**
 - Loss-of-Fluid Test
 - Power Burst Facility
 - Materials Test Reactor
 - Engineering Test Reactor



MFC-766 Sodium Event

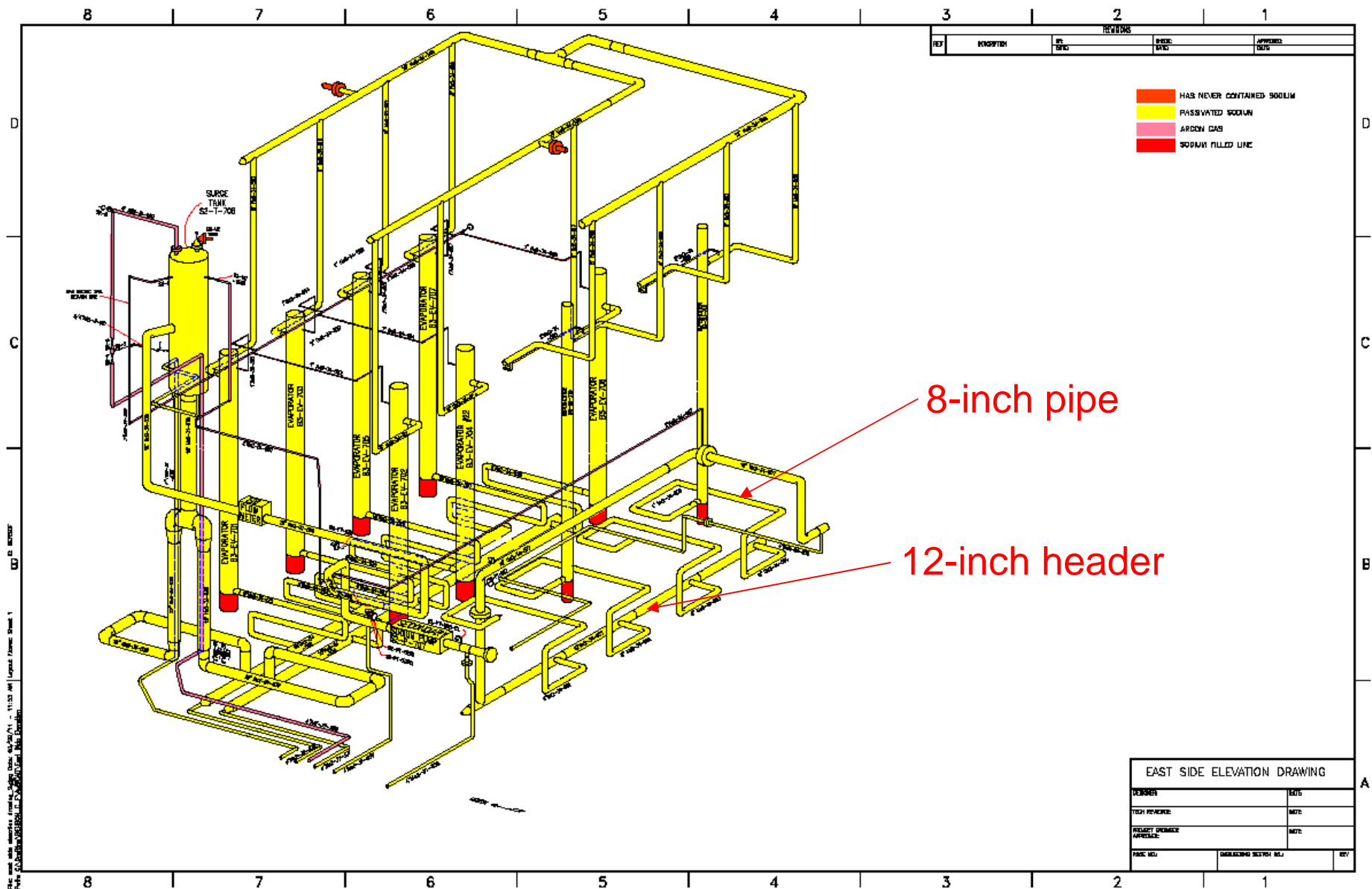


- ◆ On November 11, 2011 a pressure excursion and water hammer incident occurred at the Sodium Boiler Building ejecting treatment solution to the courtyard between MFC-766 and MFC-767
- ◆ CWI chartered an independent investigation team comprised of experts in sodium treatment, metallurgy, conduct of operations, engineering, fire protection and causal analysis
- ◆ Report of independent investigation issued on December 21, 2011 (RPT-980)
- ◆ Team investigation concluded that the most probable cause of the mechanical failure was:
 - "a sodium-water reaction, exacerbated by the differential pressure on the large volume of water in the 12-inch header and the complex geometry of the secondary system. The large hydrogen gas generation from the sodium-water reaction products impacted a water slug which accelerated with great force and fractured the 12 inch dead leg outside MFC-766..."



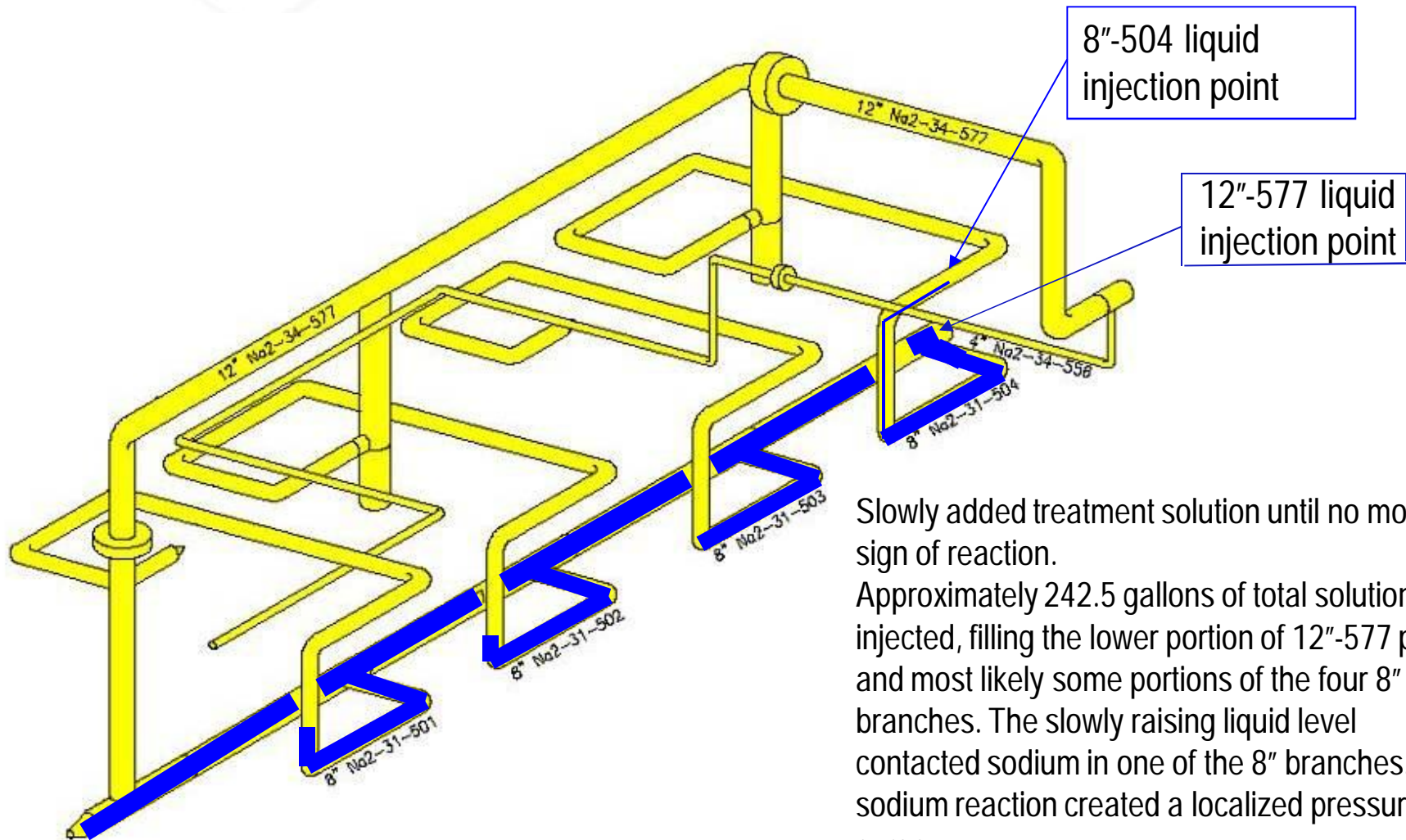
MFC-766 Sodium Boiler Building

Pre-Treatment MFC-766 Eastside Elevation



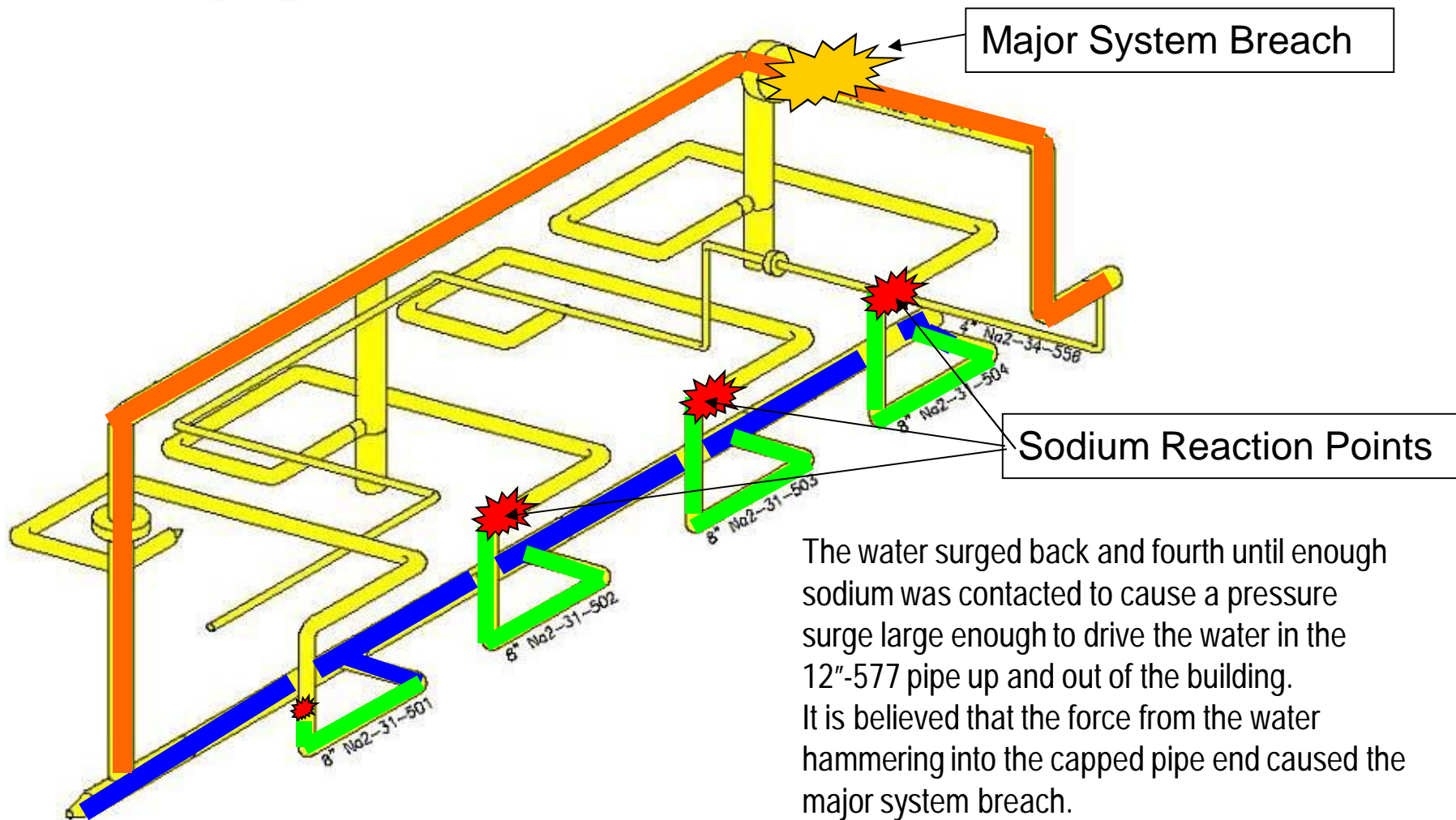
Event

Liquid Injection of 8"-504



Slowly added treatment solution until no more sign of reaction.
Approximately 242.5 gallons of total solution was injected, filling the lower portion of 12"-577 pipe and most likely some portions of the four 8" branches. The slowly raising liquid level contacted sodium in one of the 8" branches. The sodium reaction created a localized pressure surge.

Event Description (continued)



766 Exterior Pipe Stub Before and After Event



Before Water Hammer



After Water Hammer



Current

12-inch Pipe at South Exterior Wall of MFC-766



After Pipe Breach



Plugged line and sealed outer wall

Caustic Solids in Eastside Secondary Containment



MFC-766 caustic solids
before pressure washing



Pressure washing



After pressure washing

Summary of Corrective Actions



- ◆ **Complete a new hazards assessment for the sodium treatment process and obtain an independent review of the hazards assessment**
- ◆ **Address hazards due to exceeding either treatment fluid or sodium limits as analyzed in a new revision to engineering design file (EDF)-9831**
- ◆ **Establish dosing limits and/or methods to reduce potential for excursions that could result in treatment liquids being accelerated (water hammer) or pushing treatment fluid into previously untreated areas of the piping system.**
- ◆ **Perform a Conduct of Operations refresher training for all crews and support personnel**
- ◆ **Conduct a new Management Self-Assessment**

Status of Cleanup Activities and Safe Configuration



- ◆ Material released to the courtyard between MFC-766 and MFC-767 has been cleaned up
- ◆ The ruptured dead leg that was in the courtyard has been removed
- ◆ Material released to the MFC-766 westside basement secondary containment has been removed
- ◆ Shoring has been placed below piping in the MFC-766 eastside where pipe hangers were damaged
- ◆ Plugs/flanges have been placed in the 3 locations where the secondary piping ruptures occurred
- ◆ Cover gas has been restored to the system
- ◆ Material released to the MFC-766 eastside basement has been pressure washed and removed

Path Forward for Completion of EBR-II Complex Closure



- ◆ **Continue closure activities within EBR-II Reactor Building and Secondary Sodium Drain Tank in 2012**
 - Complete closure of EBR-II Reactor Building container storage area (Deep Pit and Storage Holes)
 - Perform additional rinsing of Primary Tank to achieve Closure Performance Standards
 - Perform additional rinsing of Secondary Sodium Drain Tank to achieve Closure Performance Standards
- ◆ **Implement corrective actions and design changes for Sodium Boiler Building ancillary (secondary) piping in 2012**
 - Perform new hazard analysis and revise EDF-9831

Other Topics for MFC-D&D Path Forward



- ◆ **Removal of remaining lead and hazardous electrical components in EBR-II Reactor Building to be completed in 2012**
- ◆ **Grouting of EBR-II Primary Tank to occur upon achieving Closure Performance Standards and submittal of Data Quality Assessment**
- ◆ **Notice of Intent to Close Sodium Process Facility (MFC-799) submitted on January 25 with Addenda to Class 1 Permit Modification**