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PDI Weld Overlay Program – Test Specimen Library Expansion

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PDI/NRC Meeting

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PDI Weld Overlay Repair (WOR) Program – Test Specimen Library Expansion

- This project builds on the results from a 2009 project and will serve 3 main purposes for the PDI WOL Program:
  1. *Include dissimilar metal weld overlay samples with geometries that resemble configurations across the fleet*
  2. *Include samples for the qualification of procedures and personnel for OWOL inspections*
  3. *Expand the overall number of flaws in both dissimilar metal weld and similar metal weld configurations in PDI test sets*
- Use of overlays during the past 5 years has been more than was originally anticipated especially on complex geometry configurations
  - Since 2003, ~250 overlays applied to PWR nozzles (Most applied preemptive to avoid frequent inspection intervals and all are *Dissimilar Metal Welds*)
  - Additional locations are being evaluated and many new configurations may be preemptively overlaid in the near future
- The project will deliver and phase in the samples during 2010 – 2011

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Deliverable and Application Plan

- Deliverables
  - 2009 Activities (complete)
    - Received 8” Westinghouse Safety / Relief & 34” Main Loop w/OWOL
    - Transfer completed samples into WOL Demonstration Program
  - 2010 Activities
    - Ordered 15” Westinghouse Surge & 30” BWR N1 samples
    - Take delivery December 2010 – January 2011
    - Transfer completed samples into WOL Demonstration Program
  - 2011 Activities
    - Order 8” CE Safety / Relief (w/Cast), 13” CE Surge (w/Cast), & 2” Drain Line (Generic) samples
    - Take delivery of samples by 2011 year end
    - Transfer completed samples into WOL Demonstration Program
- Application
  - Utilities and service providers will use the specimens as part of the PDI Program.

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Drain Line (Generic) Configuration

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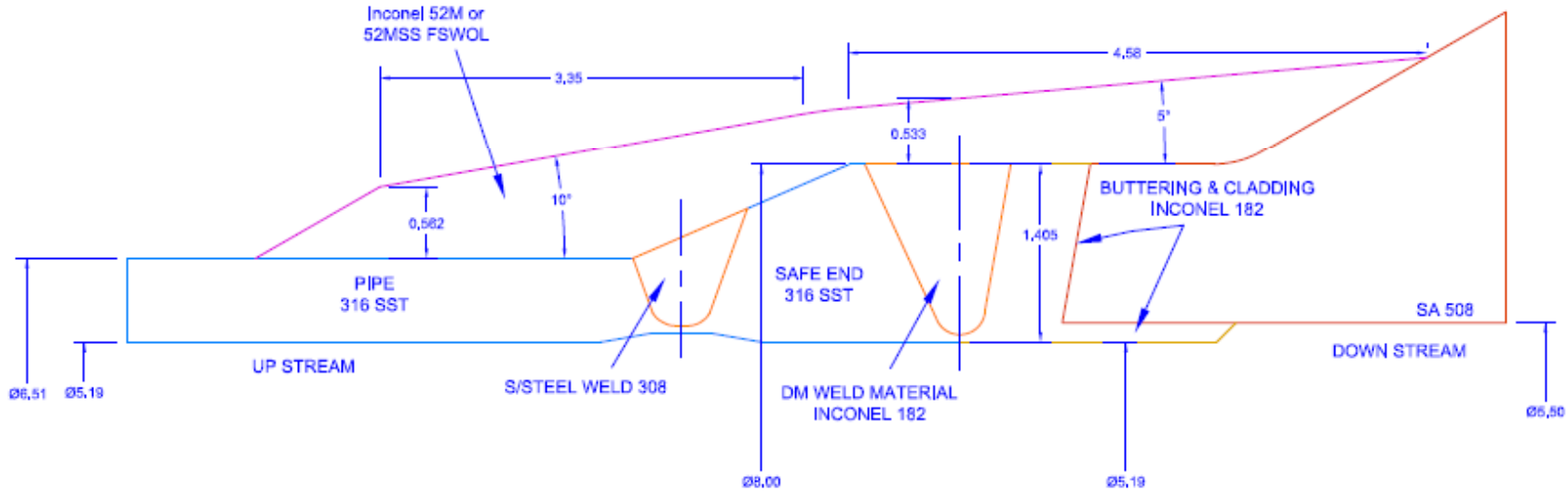
Westinghouse Safety / Relief Configuration



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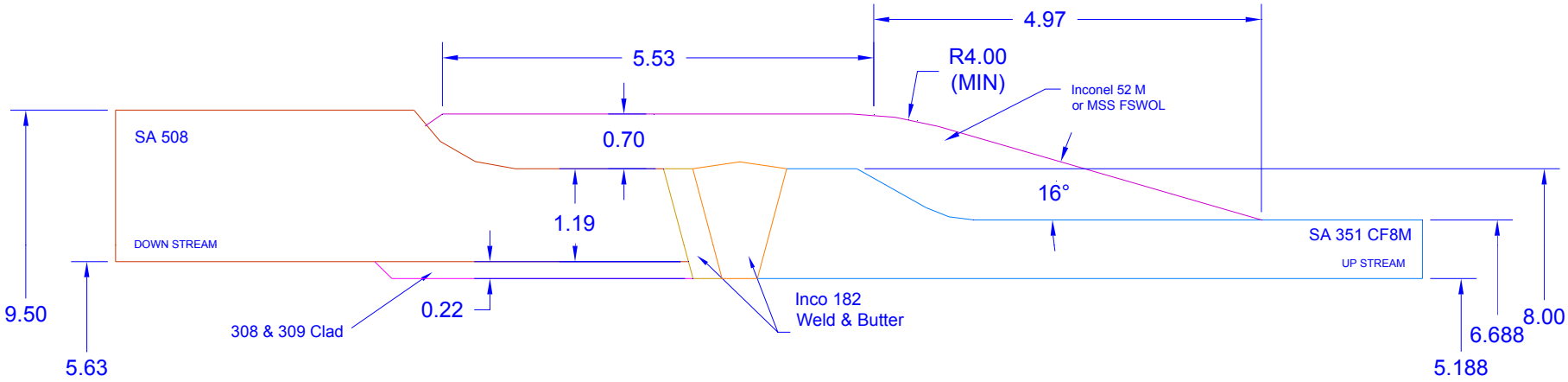
CE Safety / Relief Configuration



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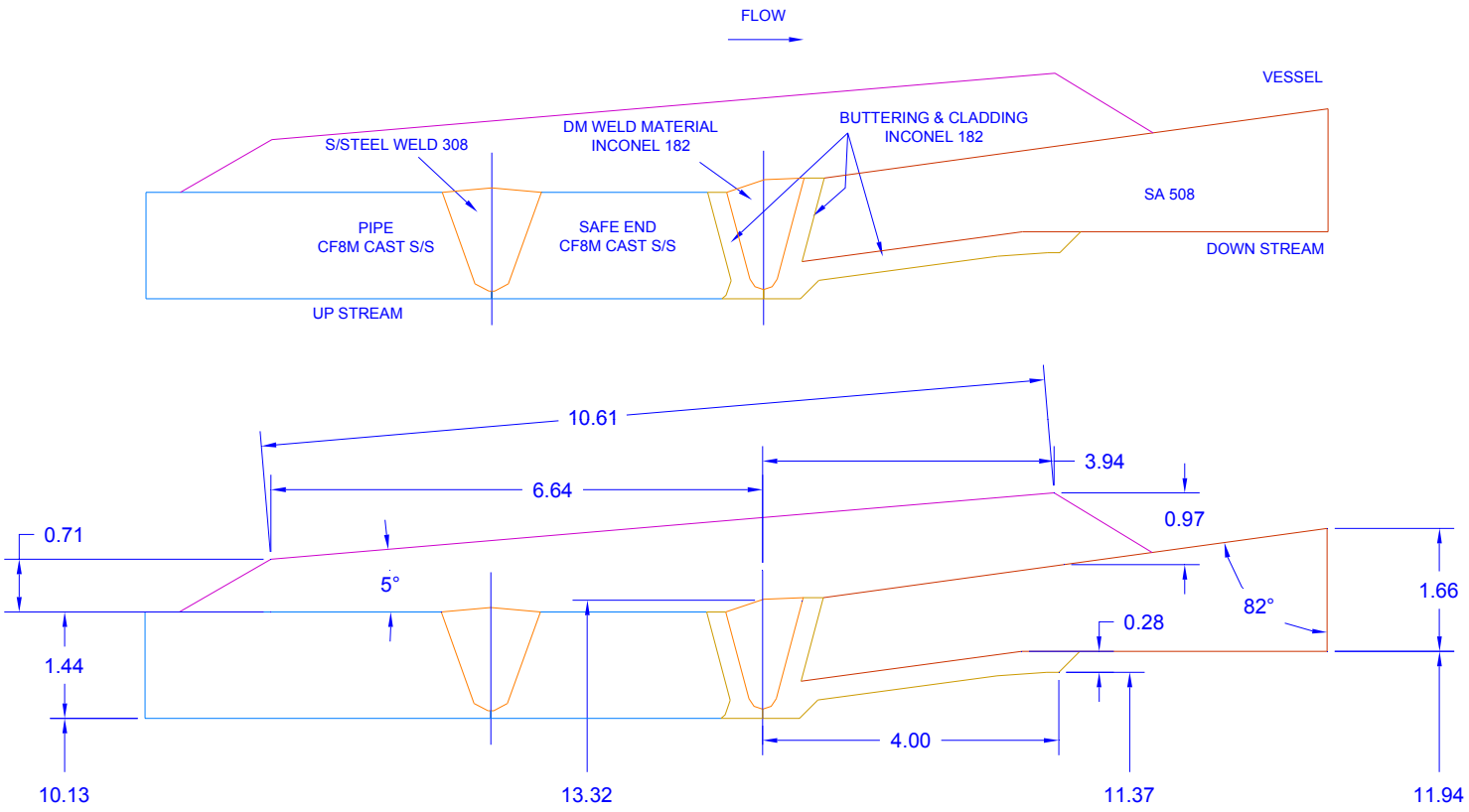
CE Surge Configuration



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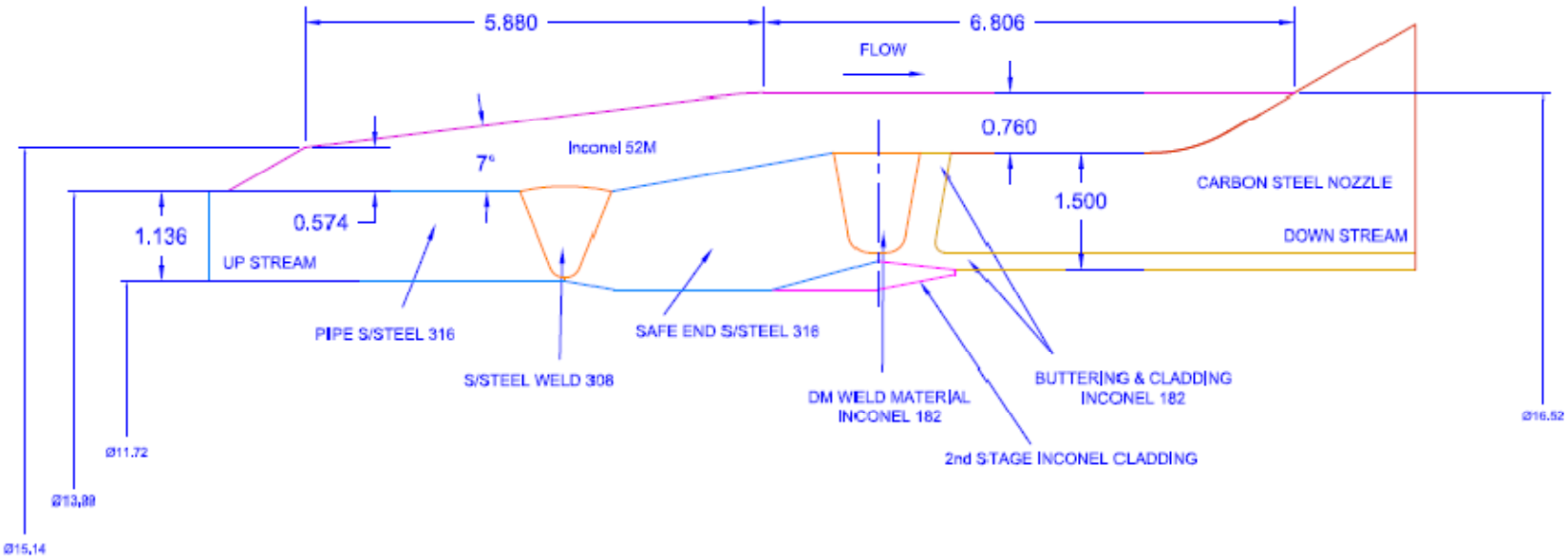
Westinghouse Pressurizer Surge Configuration



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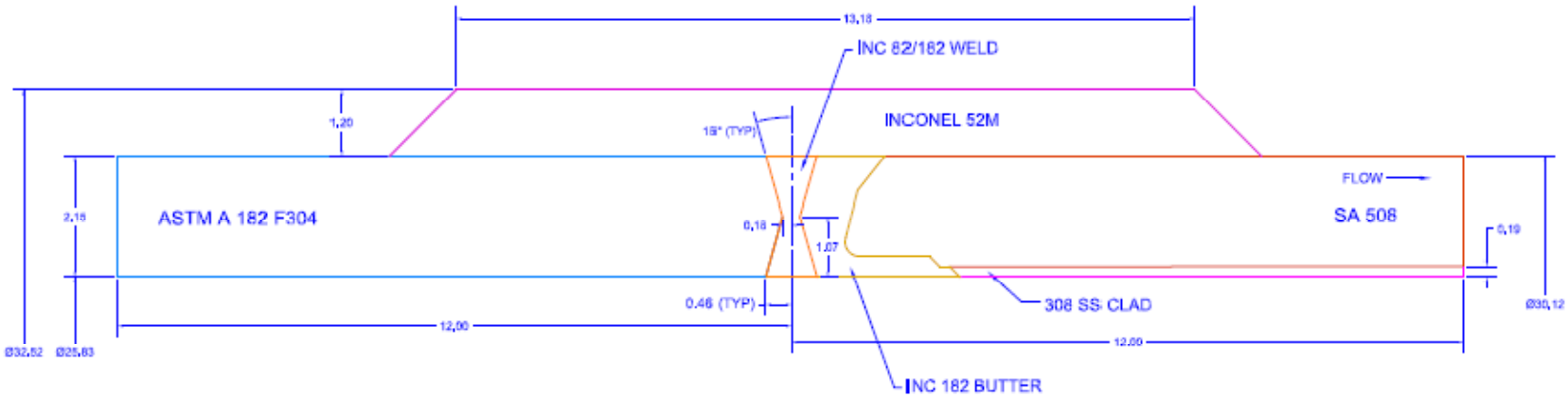
BWR Outlet Nozzle Configuration



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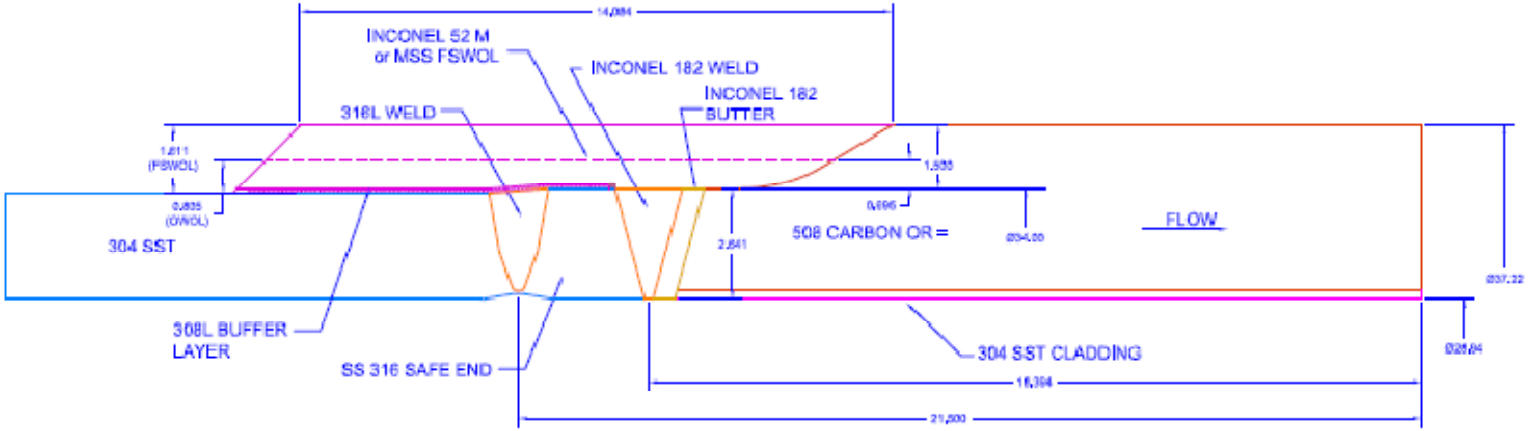
Main Loop RPV Configuration



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Summary

- This project targets fabrication of dissimilar metal weld samples with full structural and optimized weld overlays (OWOL)
- These overlay samples will contain dissimilar metal weld geometries indicative of configurations that have been mitigated or repaired in the past five years
- Strengthens the technical basis of the current program
- New samples will contain flaw distributions to support the newly proposed ASME code revisions
  - Optimized weld overlay ultrasonic inspection qualifications
  - Expand the qualified weld overlay thickness range
- This will be phased project progressing through 2010 moving towards completion in 2011

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