PERFORMANCE DEMONSTRATION INITIATIVE

Status of Dissimilar Metal Weld Sample Fabrication

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EPRI NDE Center

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Design Activities

- **All design work complete**
- **Vendor identified and contract in place**
- **Available material has been supplied to vendor**

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Fabrication Activities

- **Sample fabrication underway**
  - First set of samples to be delivered 2/17/2002
  - Samples will be shipped as they are completed
  - Last samples to be delivered by July 2002

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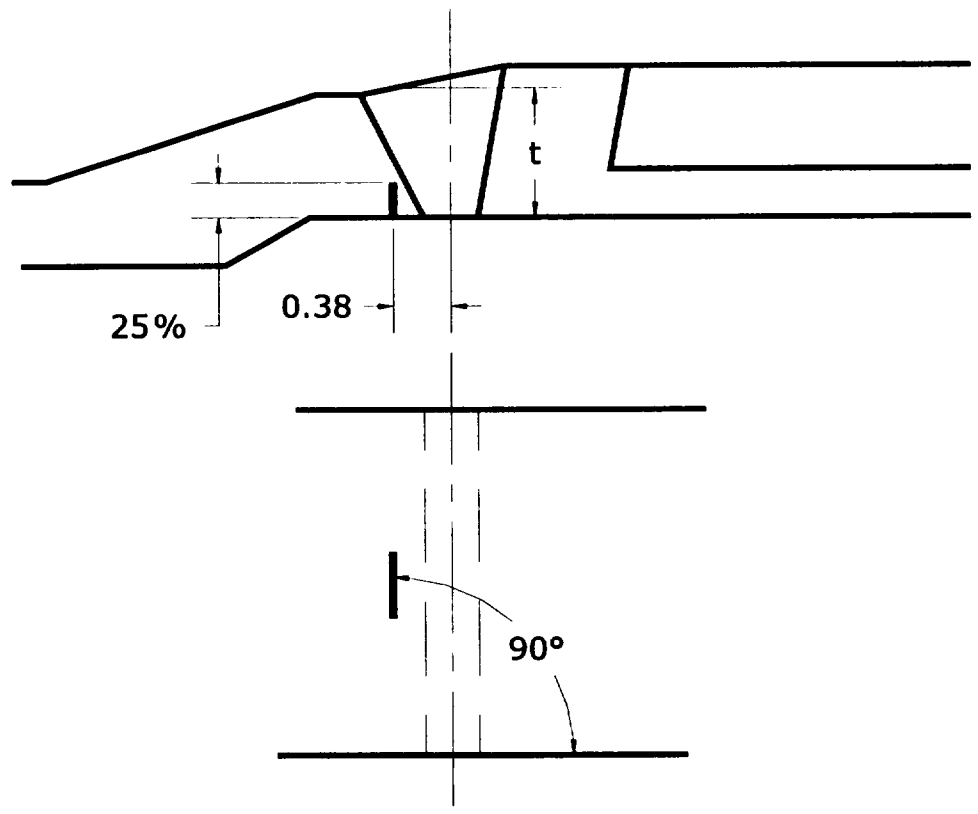
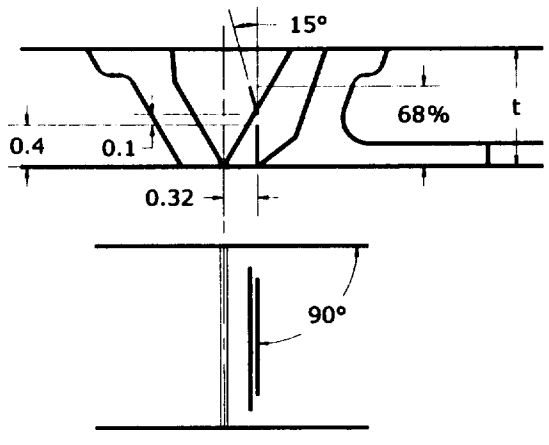
Flaw Types

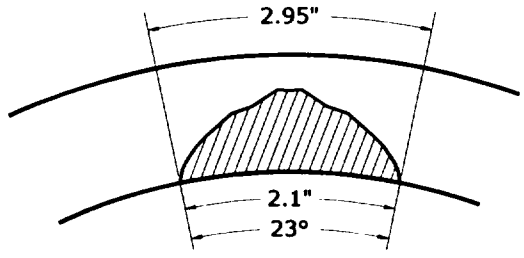
- **Flaws will be a combination of insitu-type flaws and HIP bonded alternative flaws**
  - HIP flaws will be used in places where the implantation of the flaw could produce unrealistic results
- **The design of the flaw (skew,tilt and orientation) was based on known field failures and the review of ultrasonic data from those failures**
  - Modifications to the design were made to simulate ultrasonic response of flaws

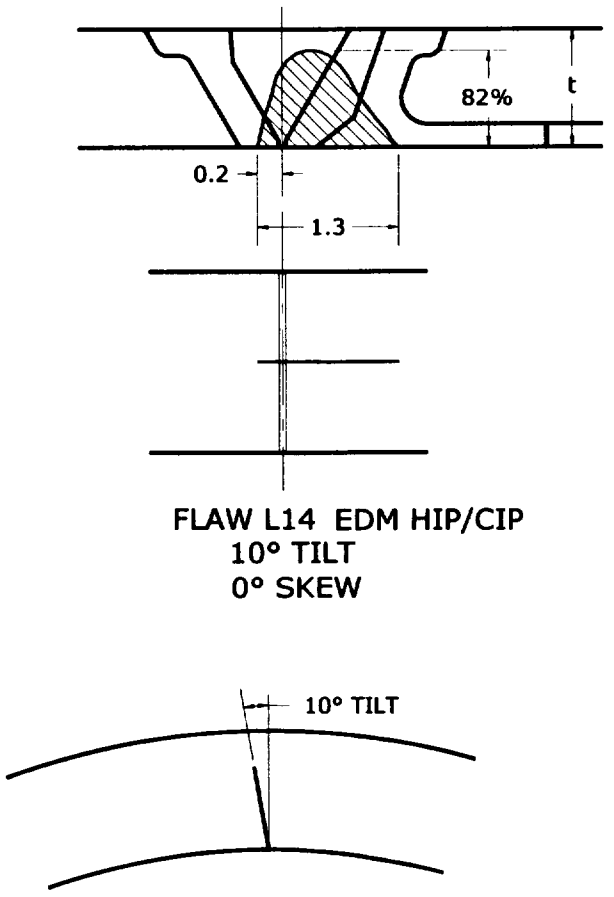


FLAW K04
0° TILT 90° SKEW

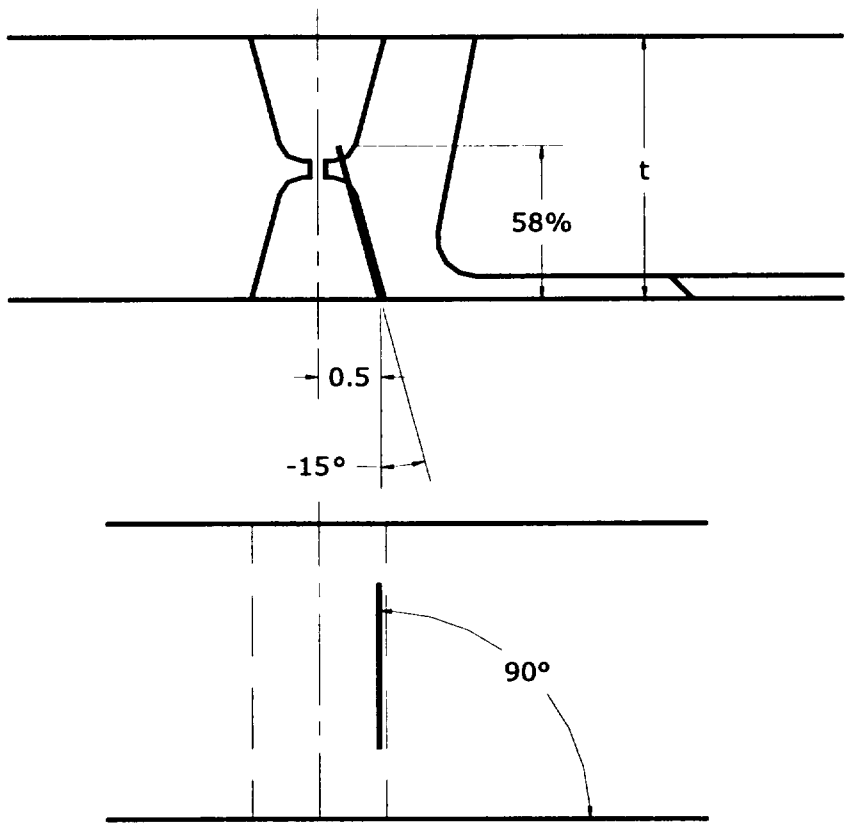


FLAW J63
UPPER SEGMENT
15° TILT 90° SKEW
LOWER SEGMENT
0° TILT 90° SKEW

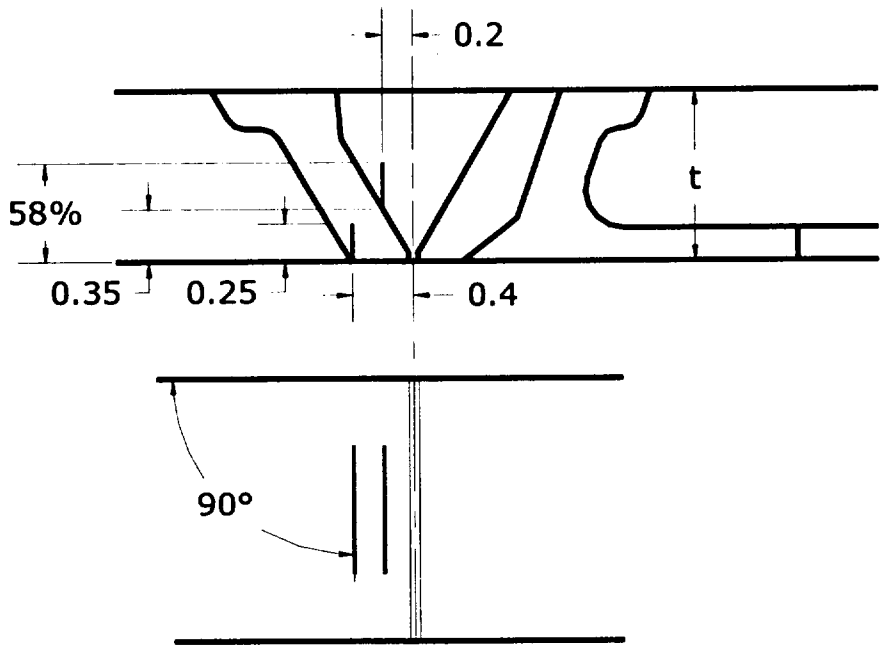




FLAW L14 EDM HIP/CIP
10° TILT
0° SKEW

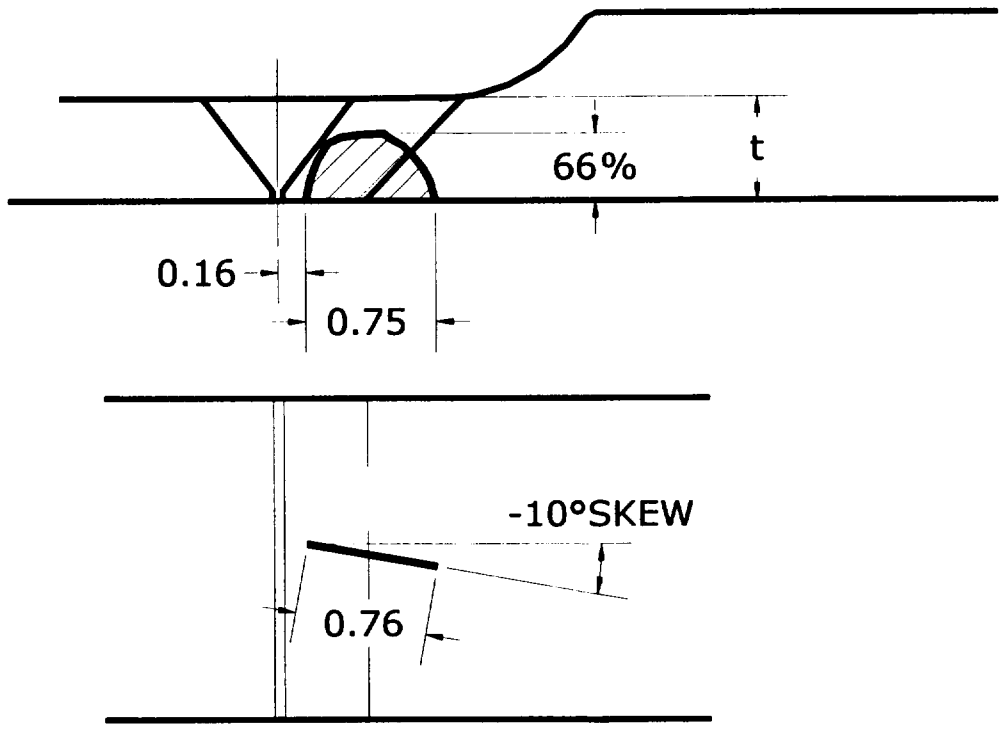


FLAW S67
-15° TILT 90° SKEW



FLAW H16

UPPER SEGMENT
0° TILT 90° SKEW
LOWER SEGMENT
0° TILT 90° SKEW



FLAW W07 - EDM HIP/CIP
0° TILT -10° SKEW

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Geometry

- **Samples contain real world geometry**
  - Numerous drawings reviewed that were supplied from plants
- **Ultrasonic beam plotting was performed in determining the placement of the flaws**
- **Modifications to the fit-ups of the samples were made in order to simulate known field conditions**

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Material

- **Where possible the same processes will be used to fabricate the samples**
  - Welding sequence
  - Machining details
- **Where possible material from actual field configurations obtained from cancelled reactors will be used**
  - Safe-ends
  - Nozzles
  - Cladding

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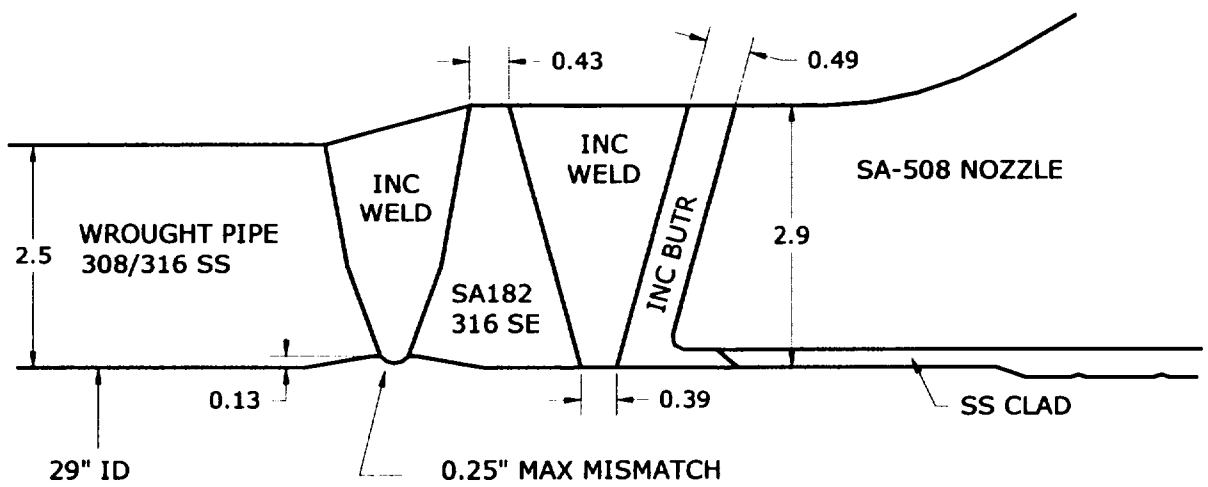
OUTLET SHOP WELD CONFIGURATION (601/X)



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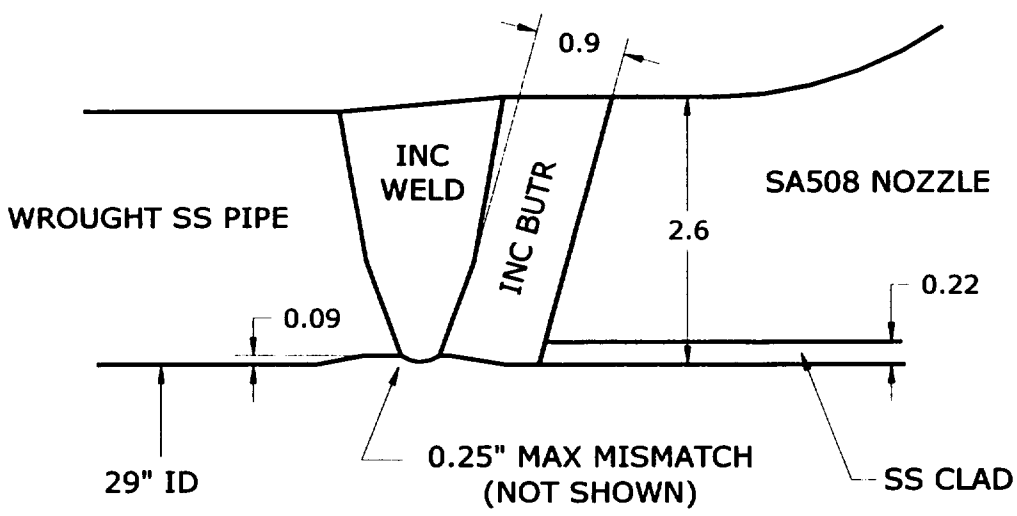
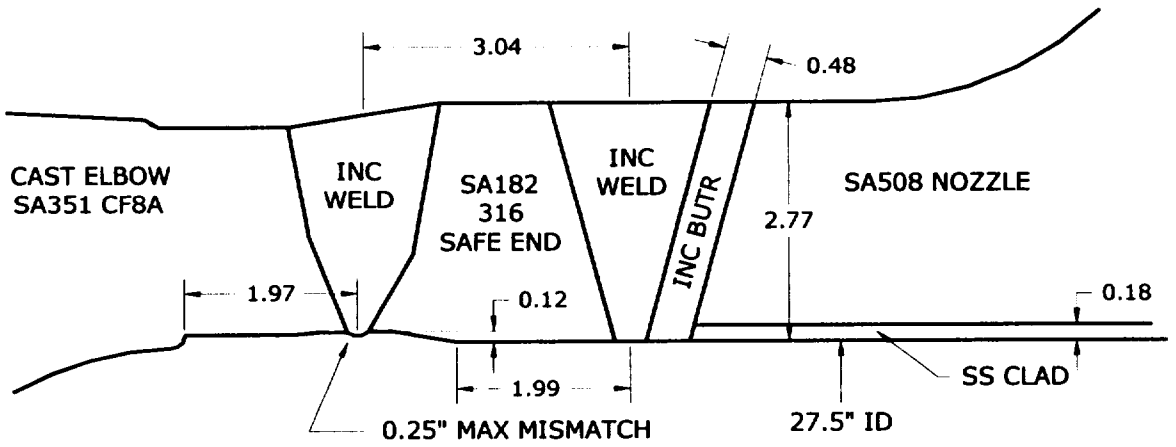
OUTLET FIELD WELD CONFIGURATION (602/X)



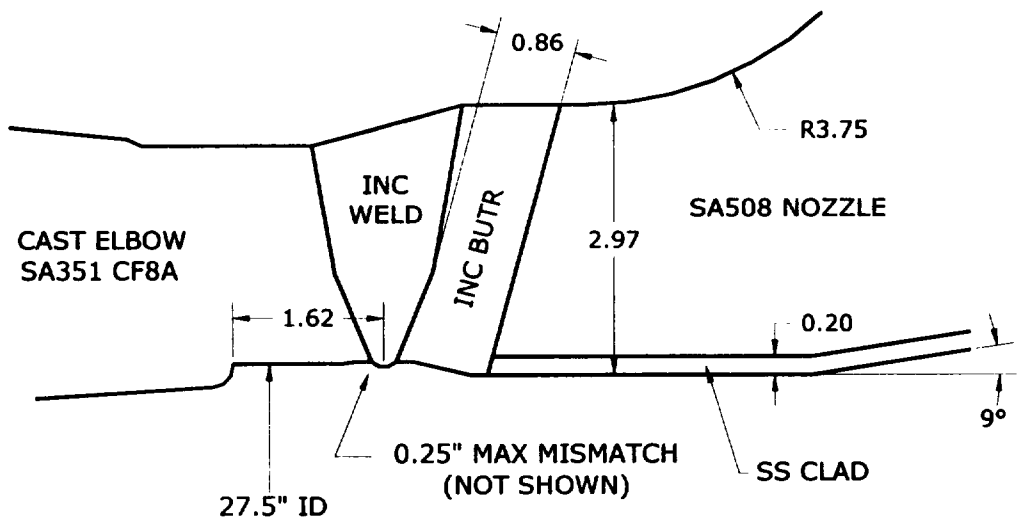
PERFORMANCE DEMONSTRATION INITIATIVE

INLET SHOP WELD CONFIGURATION (603/X)



PERFORMANCE DEMONSTRATION INITIATIVE

INLET FIELD WELD CONFIGURATION (604/X)



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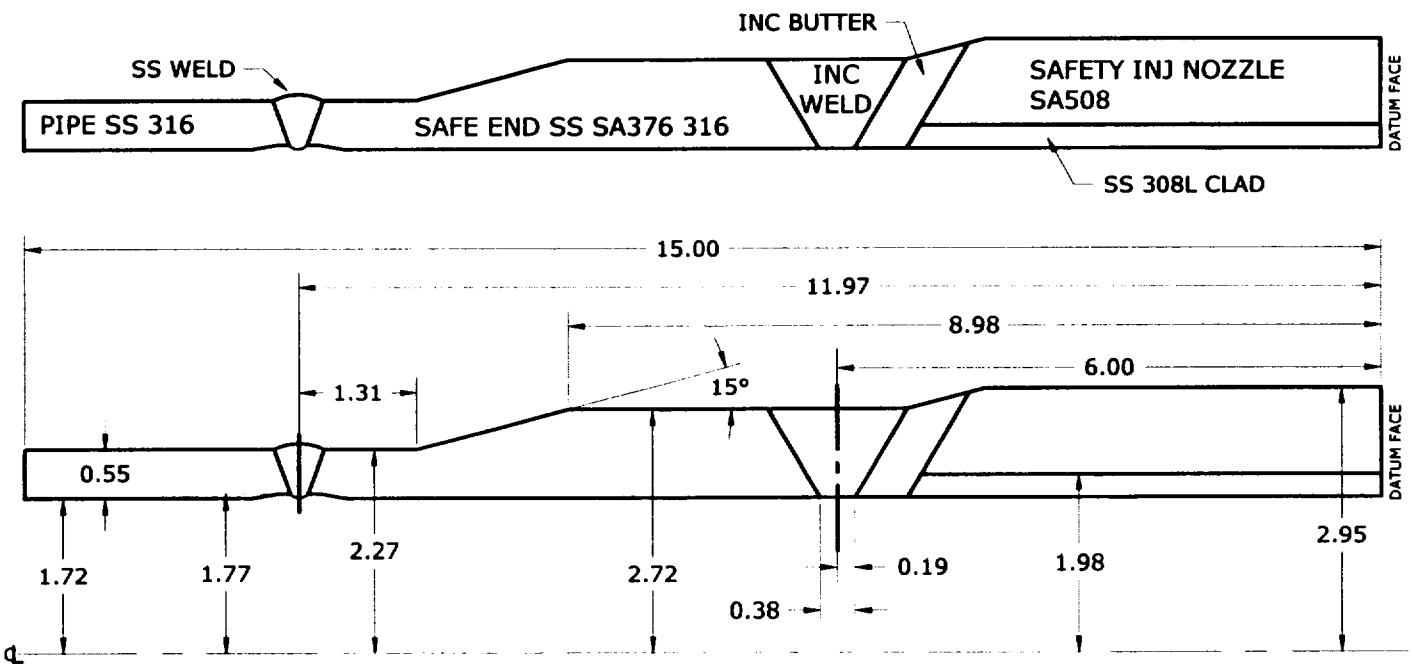
SAFETY INJECTION NOZZLE CONFIGURATION (605/X)



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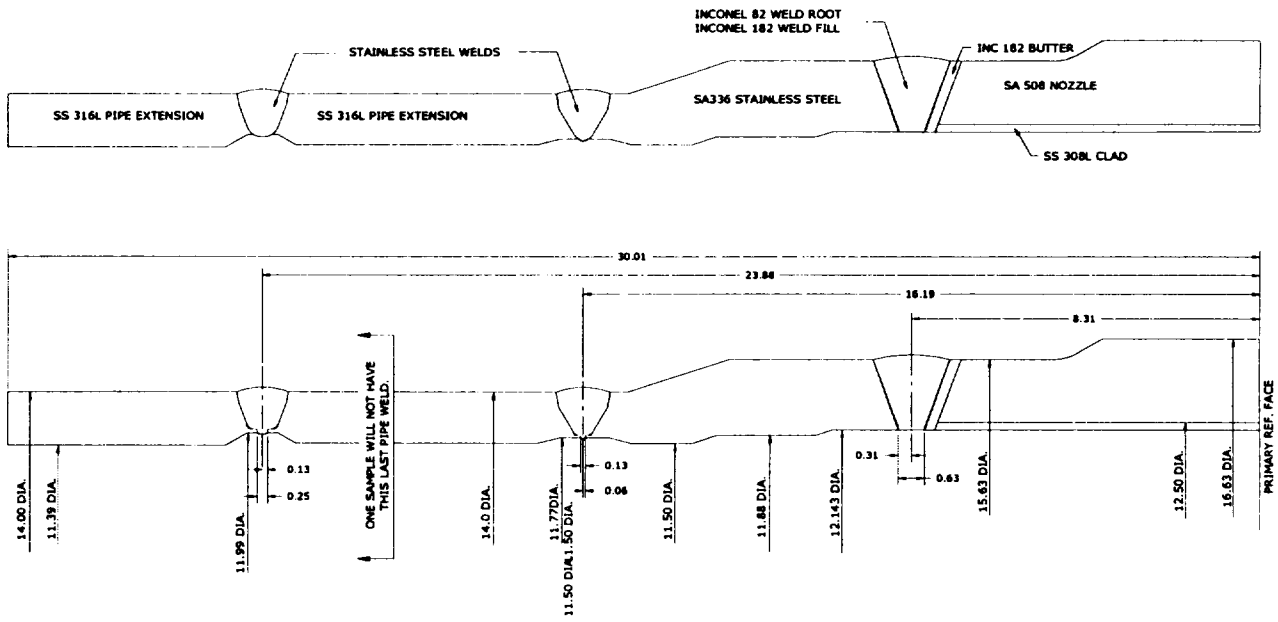
CORE FLOOD NOZZLE CONFIGURATION (606/X)



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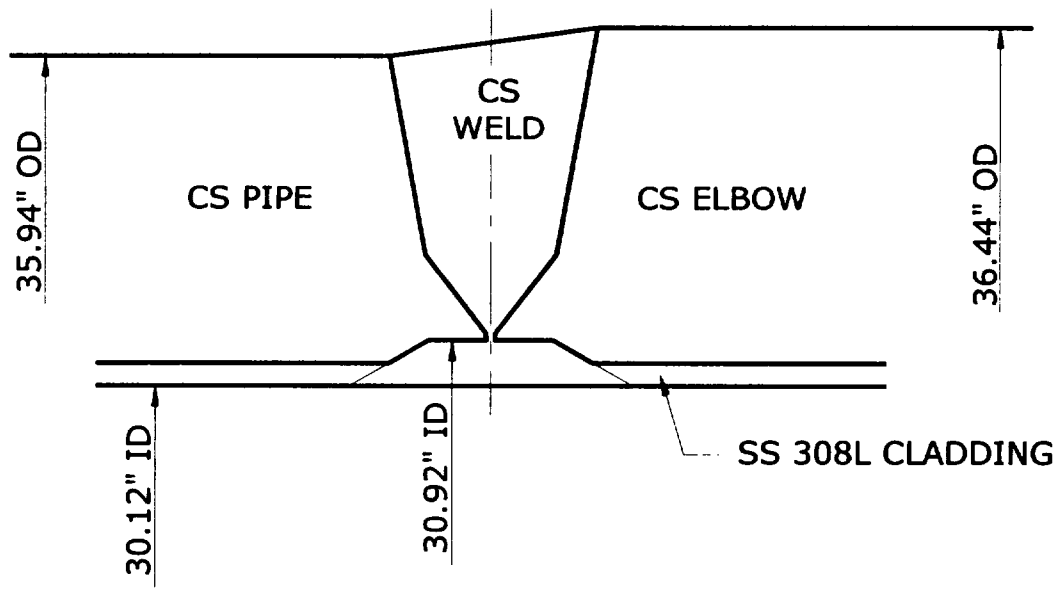
CS PIPE-TO-ELBOW CONFIGURATION (607/X)



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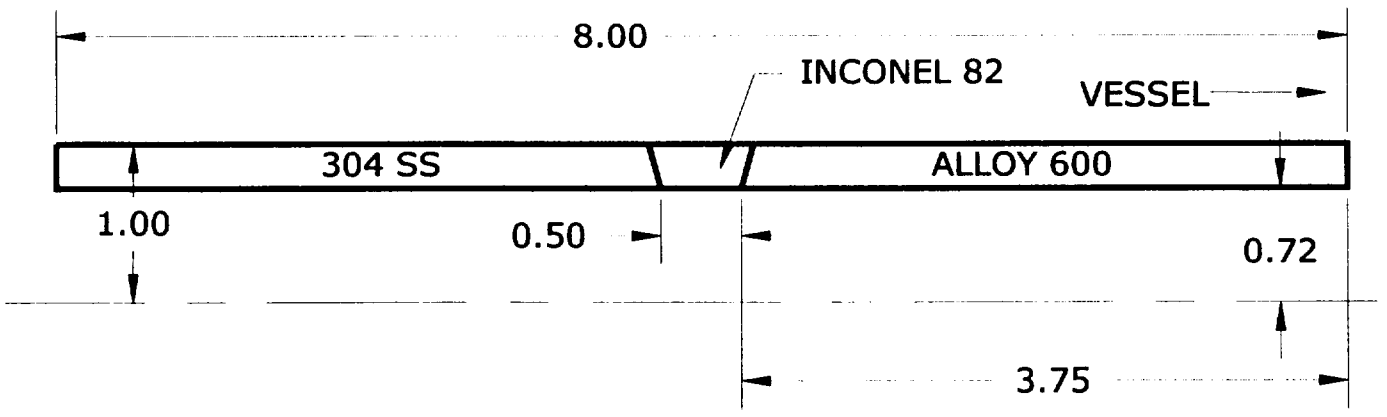
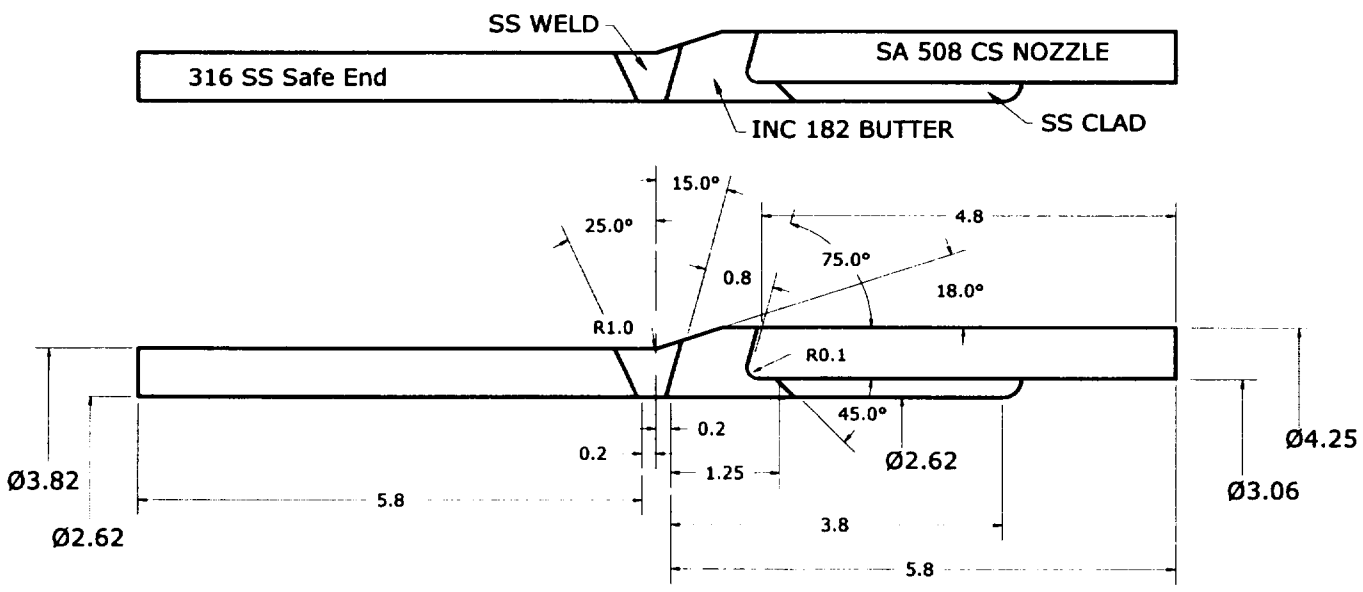
BWR STANDBY LIQUID CONTROL CONFIGURATION (701/X)



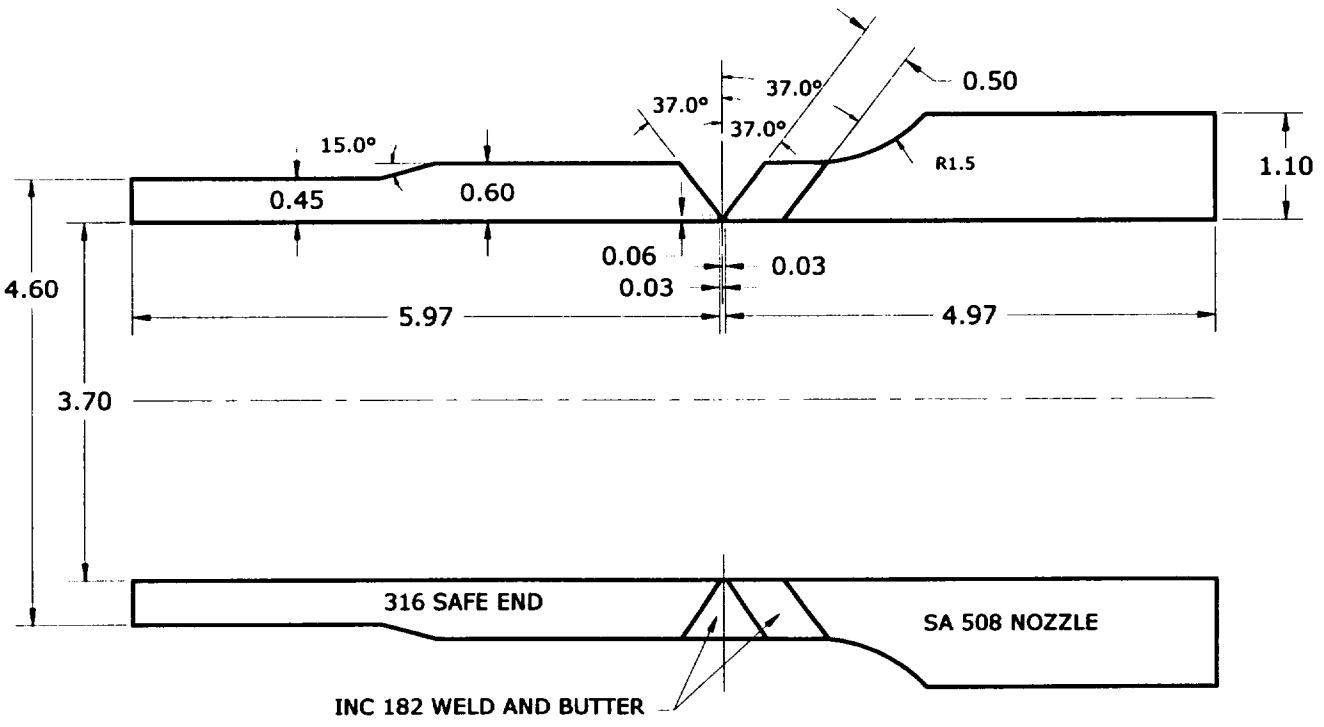
PERFORMANCE DEMONSTRATION INITIATIVE

PWR PRESSURIZER SPRAY CONFIGURATION (702/X)



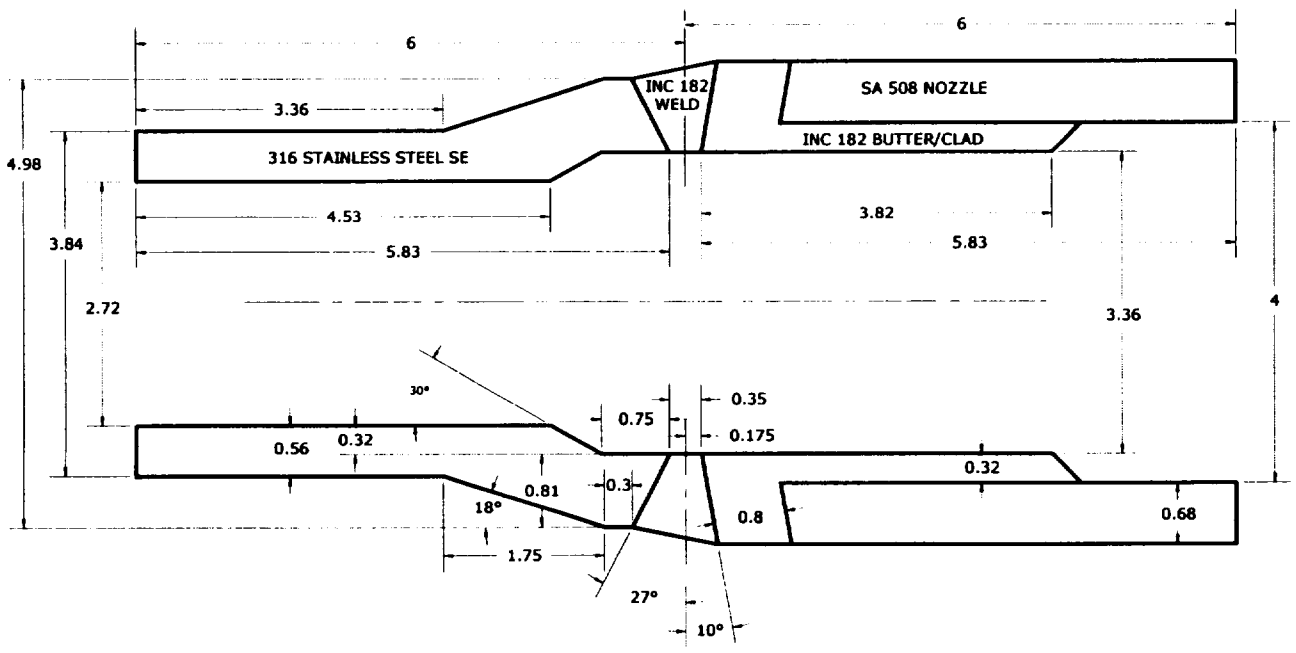
PERFORMANCE DEMONSTRATION INITIATIVE

BWR CRD & JET PUMP RETURN CONFIGURATION (703/X)



PERFORMANCE DEMONSTRATION INITIATIVE

PWR PRESSURIZER SPRAY NOZZLE CONFIGURATION (704/X)



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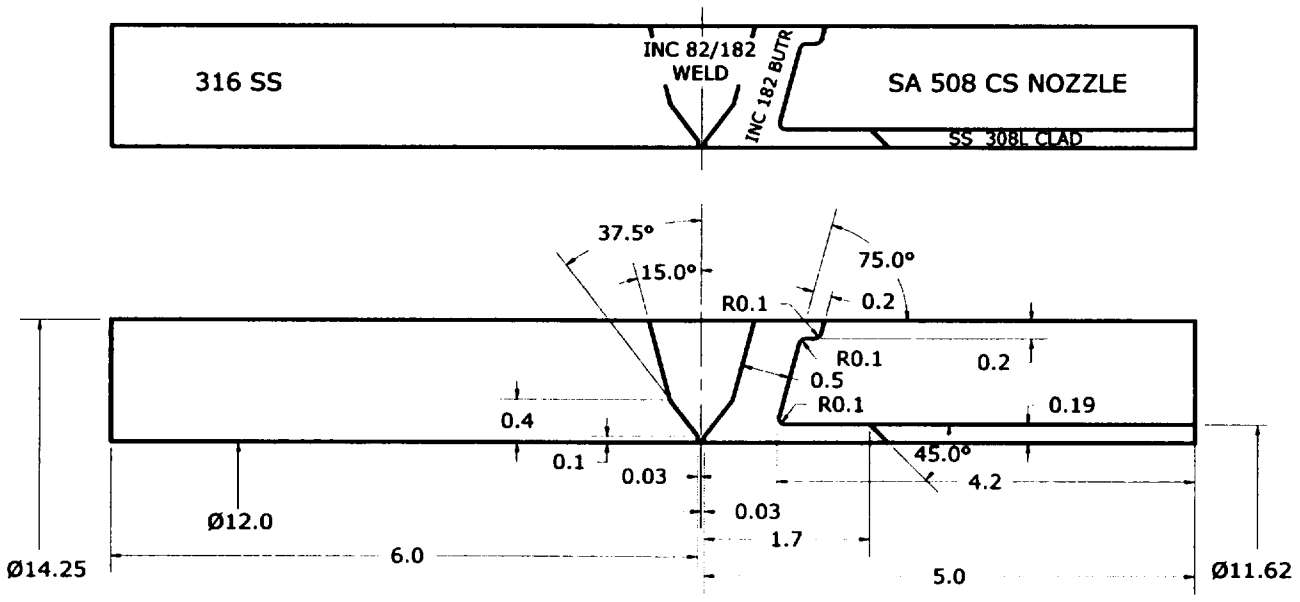
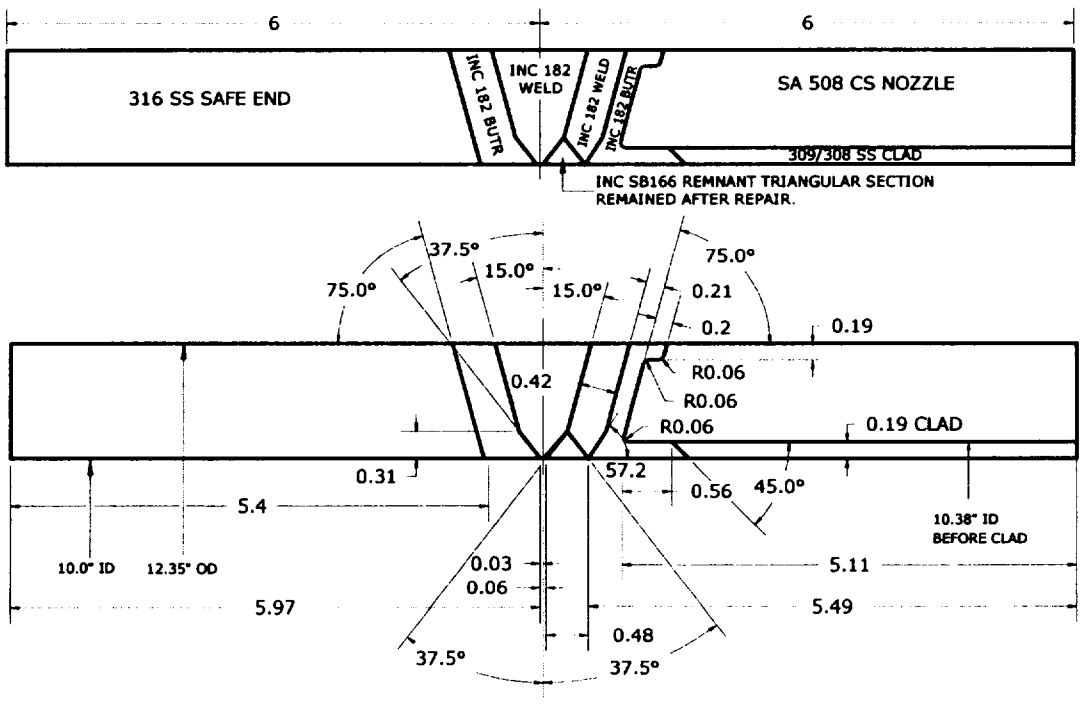
BWR STANDARD N2 NOZZLE CONFIGURATION (705/X)



PERFORMANCE DEMONSTRATION INITIATIVE

BWR N2 NOZZLE REPLACEMENT CONFIGURATION (706/X)



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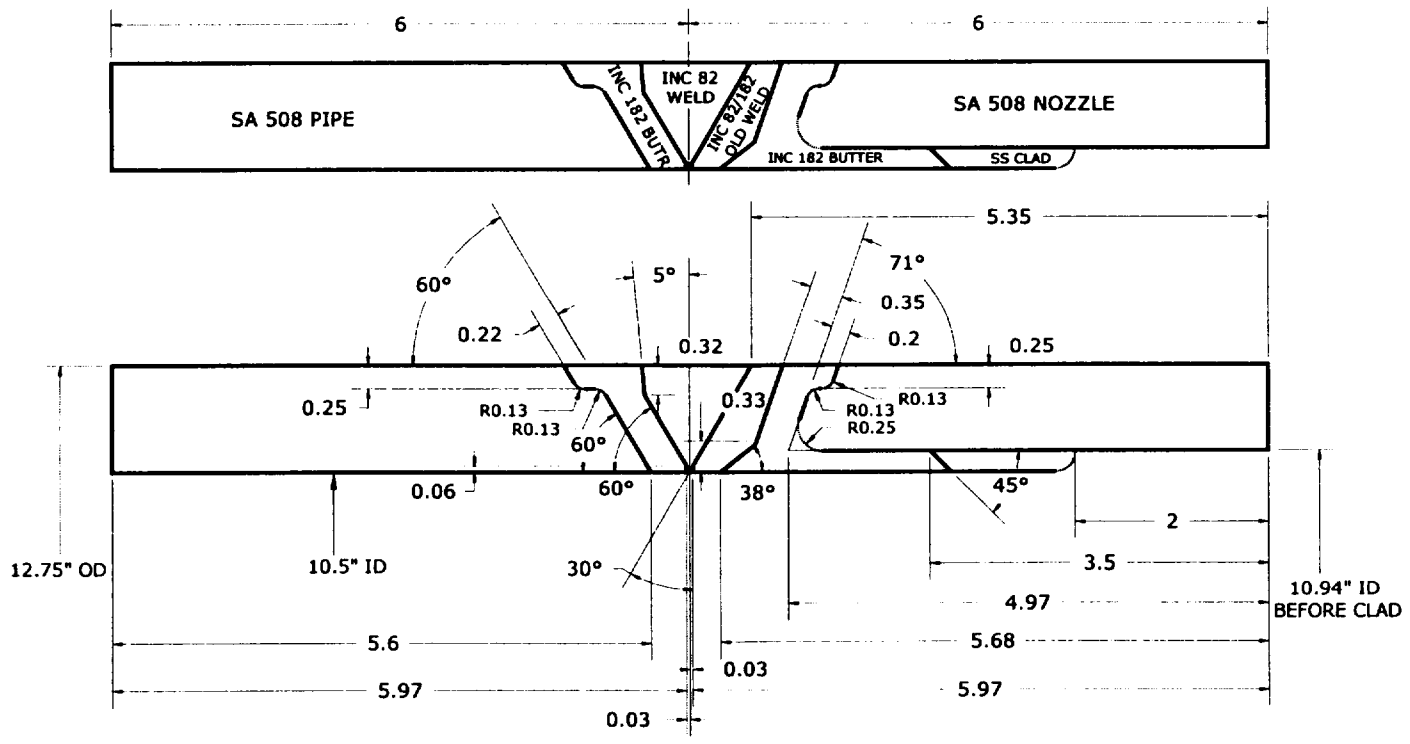
BWR 12" N4, N5, & N6 NOZZLE CONFIGURATIONS (707/X)



E27

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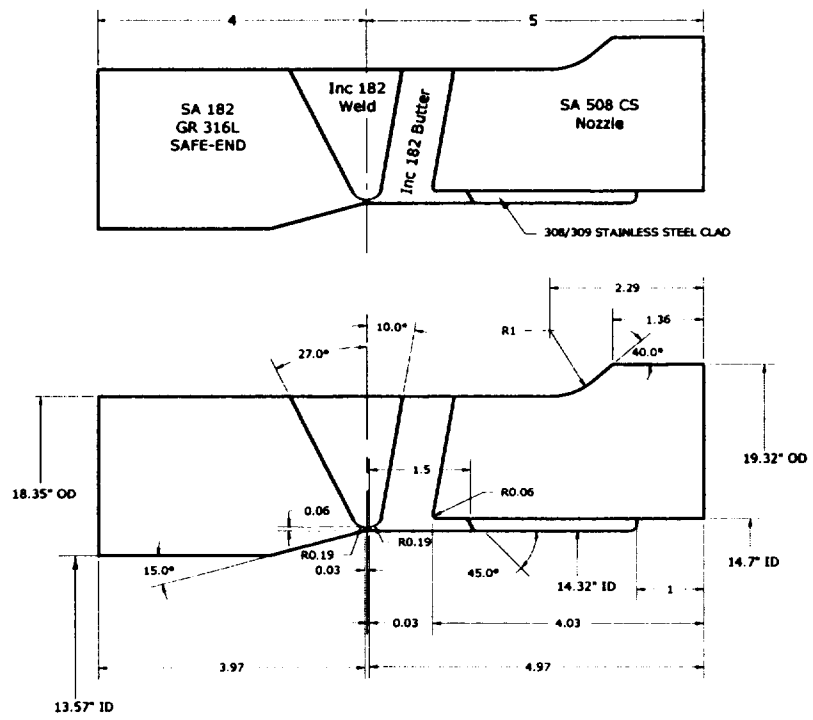
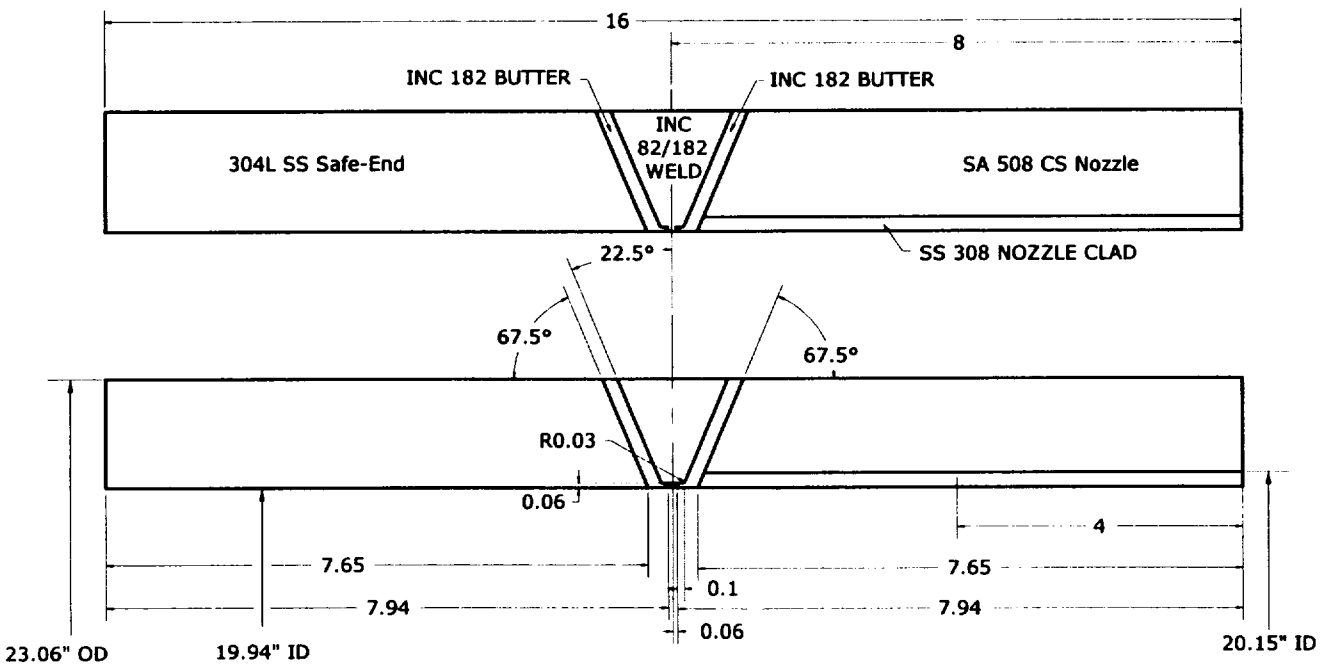
PWR 18" PRESSURIZER SURGE NOZZLE CONFIGURATION (708/X)



PERFORMANCE DEMONSTRATION INITIATIVE

BWR RECIRCULATION N1 OUTLET NOZZLE CONFIGURATION (709/X)



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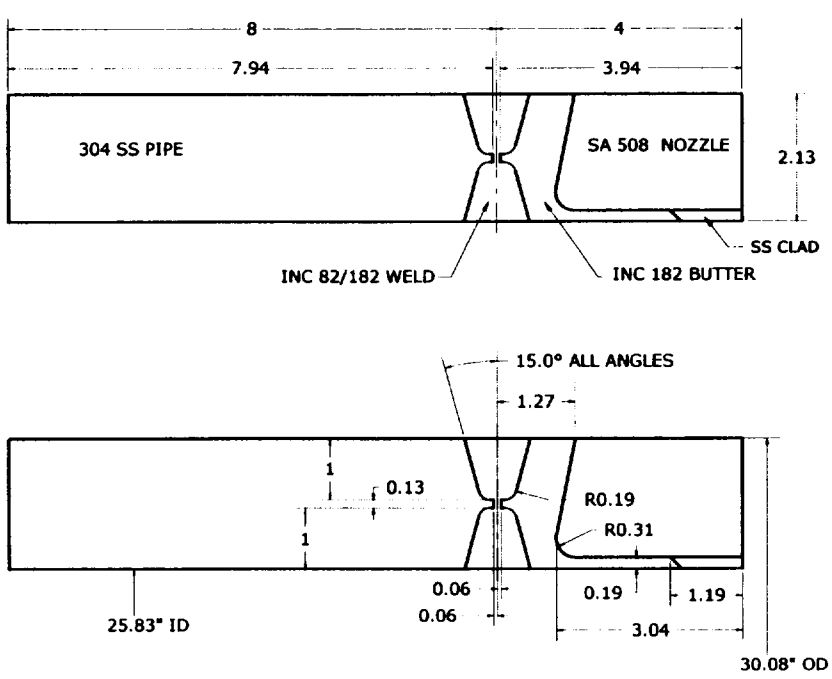
28" BWR N1 OUTLET NOZZLE DOUBLE-VEE CONFIGURATION (710/X)



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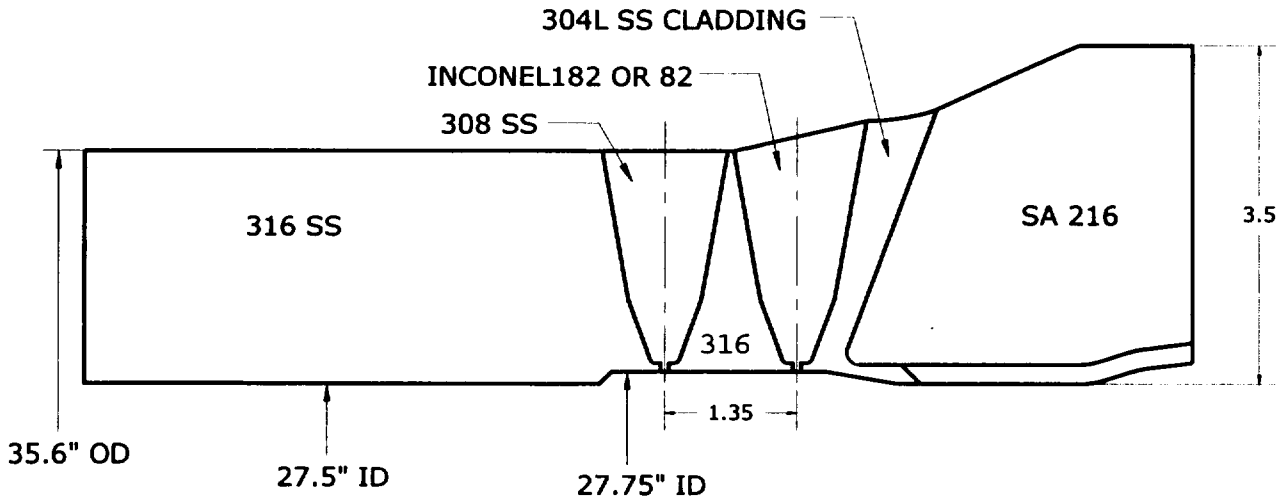
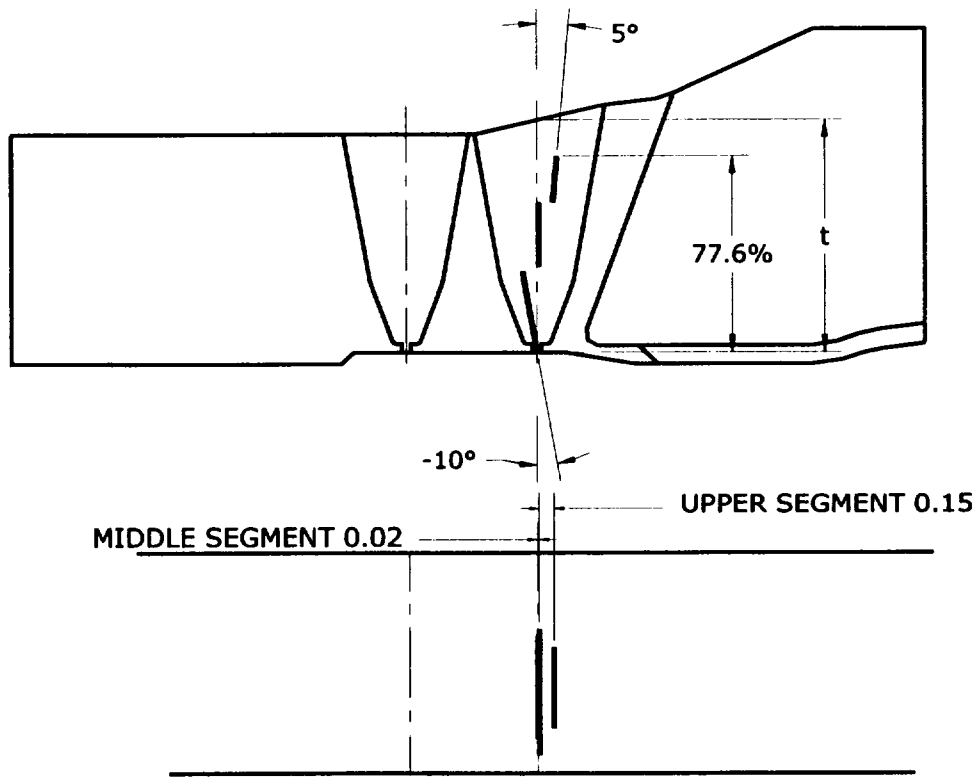
36" PWR STEAM GENERATOR NOZZLE CONFIGURATION (711/X)





FLAW FFH01
LOWER SEGMENT -10° TILT
MIDDLE SEGMENT 0° TILT
UPPER SEGMENT 5° TILT
90° SKEW (ALL SEGMENTS)

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PWR STEAM GEN NARROW GROOVE WELD NOZZLE CONFIGURATION (712/X)
(FLAT PLATE CONFIGURATION)