

REPAIR OF DWPF CONTAMINATED VESSEL



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SLURRY MIX EVAPORATOR

- Placed in Radioactive Service in 1996
 - Radioactive Sludge / Glass Frit Slurry
- Tank Repaired in 2003
 - Hole in Bottom of Tank (Near Center, ~1" by 1/4")
 - Thinning Near Coil Guides
- Description (C-276 alloy)
 - Size (12' dia. x 17' high)
 - Volume (9,500 gallons)
 - Weight (45,000 lbs.)
 - Bottom Wall (3/4" thick)

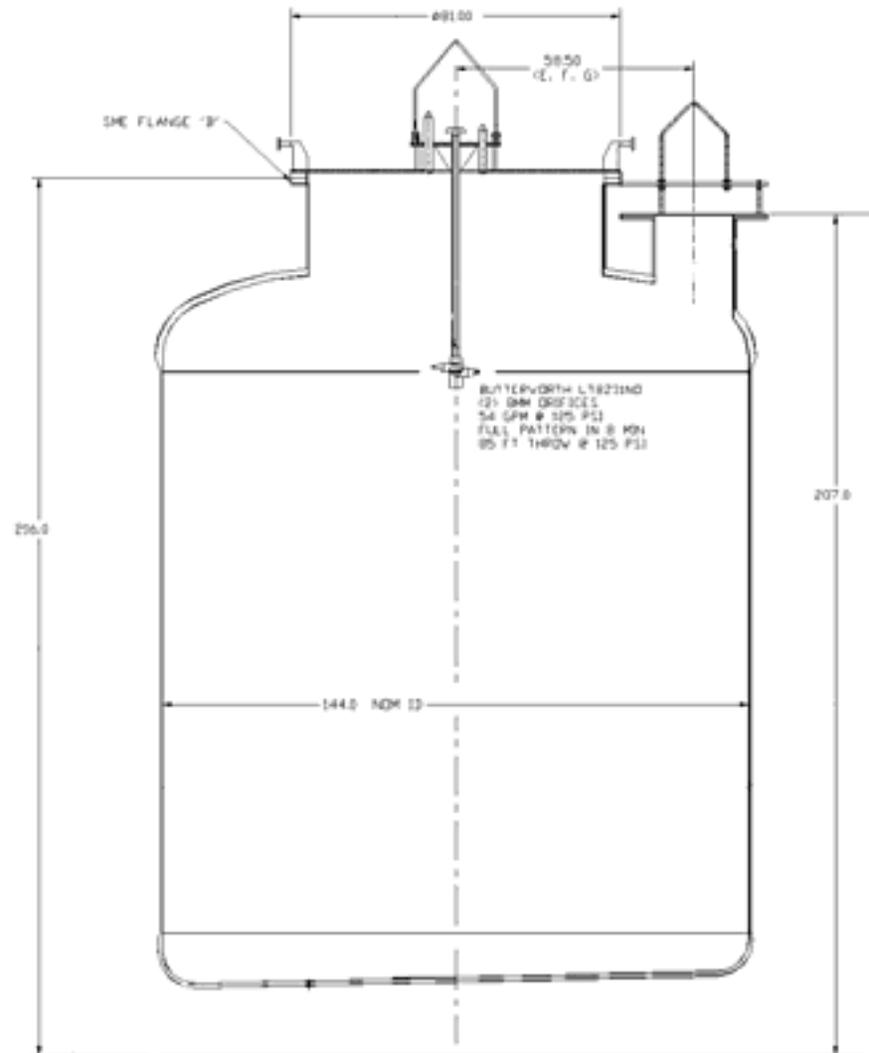


DAMAGE TO SME



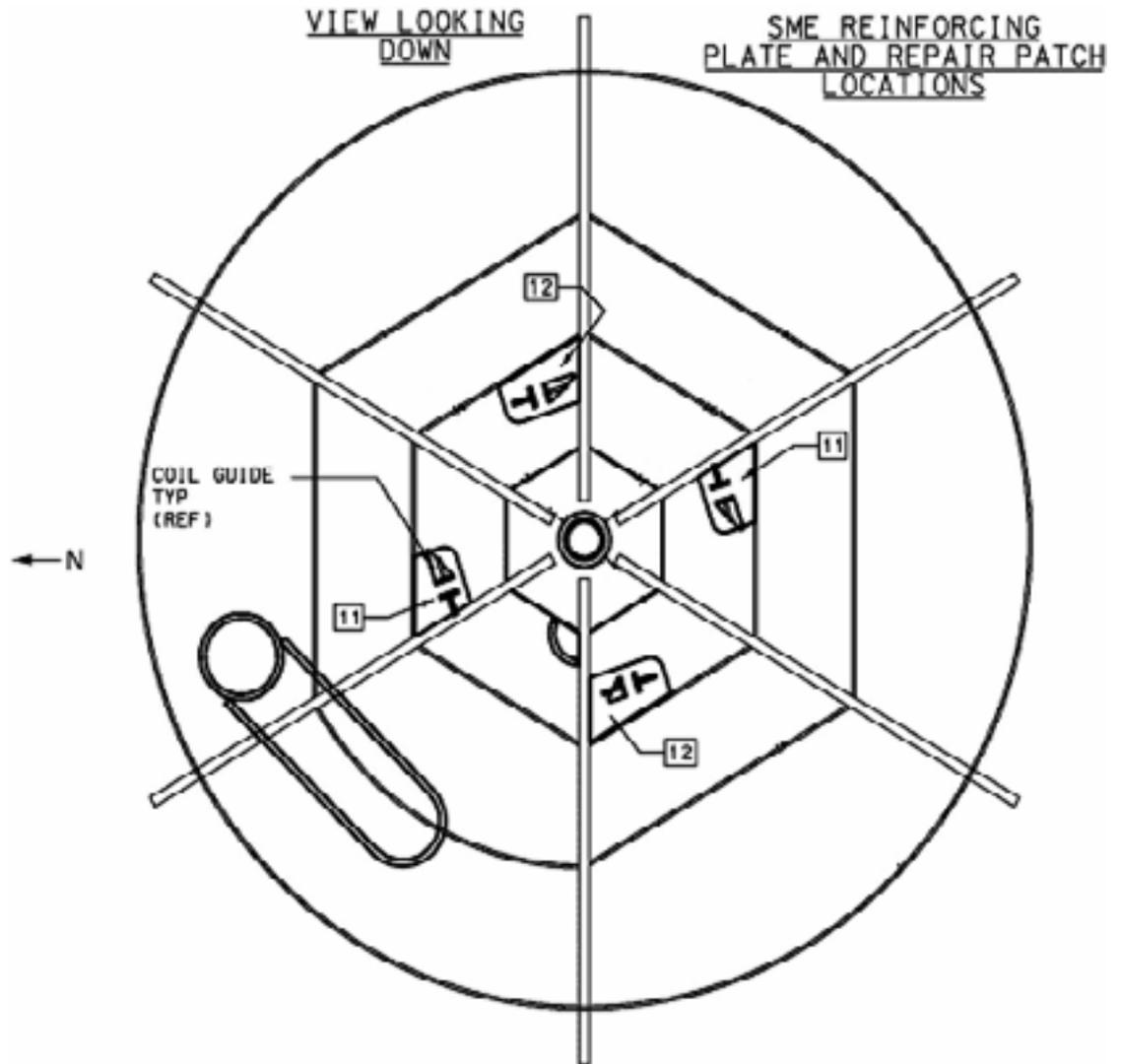
VESSEL DECONTAMINATION IN REMOTE PROCESS CELLS

- External Vessel
 - Tank Swivel Assembly
 - Clayton Cleaners (Steam / Decon Solution)
 - Sellers Jets (Hot Water / Decon Solution)
- Internal Vessel
 - Nitric Acid Soak (Temporary Rubber Plug)
 - Rotary Tank Cleaner
- De-inventory of SME Vessel (Solid Residue)
 - Grapple Device (large chunks)
 - Vacuum System (fine pieces)
 - 75% Reduction in Residue



VESSEL REPAIR PLAN

- Seal Weld Tank (permit water addition)
- NDE of Tank Floor (UT)
- Weld Repair Plate Over Hole in Bottom of Vessel
- Weld Reinforcement Plates Under Thinned Areas on Bottom of Tank
 - Four Plates



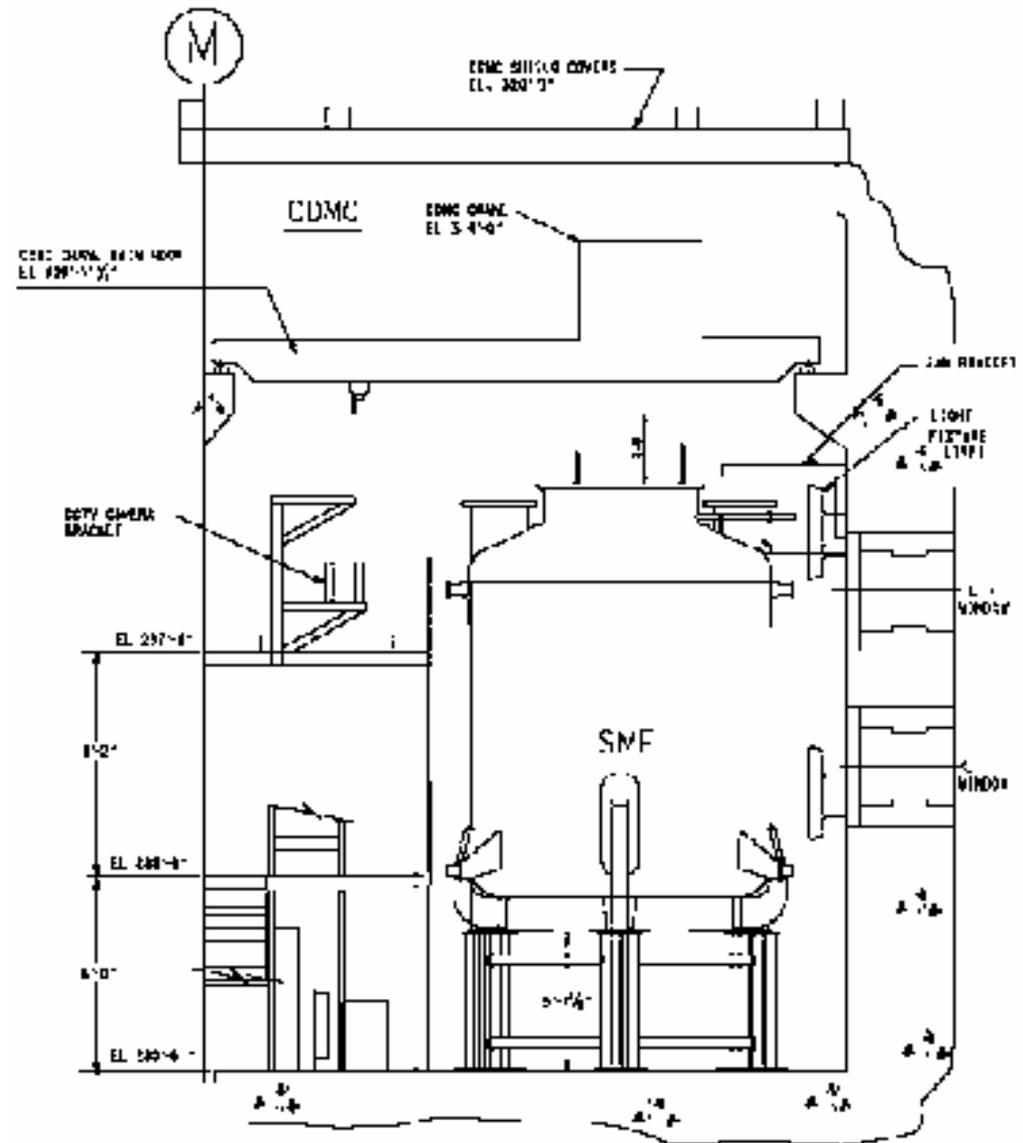
SHIELDING CONSIDERATIONS

- Shielding Strategy
 - Lead Shielding Around Sump
 - Seal Hole / Add 2' of Water
- Hot Spots (before & after shielding)
 - Tank Sump
(10-50 Rem/hr. to 2 Rem/hr.)
 - Inner Tank Wall
(2 Rem/hr)
- Work Area Under Tank
 - Dose Rate
(100-500 mrem/hr.)



SME Repair Plan Implementation

- Seal Weld Applied (hole)
 - Water Added for Shielding
- NDE Performed (UT)
- Repair/Reinforcement Plates Welded to SME
- Successful Standing Water Leak Test
- SME Returned to Service



SUMMARY

- SME Vessel Successfully Repaired, Leak Tested and Returned to Service
 - Saved Replacement Cost of Approximately \$3.0 Million
- Use of Lead Shielding & Water Reduced Net Personnel Exposure (23,000 mrem)
- Total Exposure for Job
 - 6,700 mrem
- Maximum Individual Exposure
 - < 500 mrem

