Pipe-in-Pipe Applications in the Petrochemical Industry
APPLICATIONS FOR DOUBLE WALLED PIPING

- Containment
- Corrosion
- Protection
- Constructability
- Heat transfer
CONTAINMENT

- Fuel transfer
- UST regulated piping
- Toxic substances
- Potable water
- Nuclear
CONTAINMENT AND CORROSION
FIBERGLASS - MORTAR - STEEL SYSTEM

Plant fabricated multiwall pipe and fittings

Unisert Multiwall Systems, Inc.
MECHANICAL PROTECTION

CASED CROSSINGS

Railroads
Highways

DRAKE POINT F-76 SHORE APPROACH
TYPICAL CASED CROSSING

- Second Insulator 5 feet in from end of casing
- Insulator—maximum of one foot from end of casing
- Vent pipe
- Casing seal
- Carrier pipe
F-76 PULLHEAD EXITING CARRIER PIPE
LANDFALL OF DRAKE POINT F-76 PIPELINE
Pipe-in-pipe for deep water application
QUADRUPLE PIPE SECTIONS READY FOR J-LAY
CONSTRUCTABILITY - Offshore Pipelines

- Bundles
- Buoyancy control
- Insulation

E.g. Troika
J-Lay
HEAT TRANSFER

- Waxy crude oil
- Wet natural gas
- Oilwell tubulars in permafrost
- Liquid sulphur
LIQUID SULPHUR PIPELINE

- HDPE COATING
- 3" POLYURETHANE INSULATION
- NPS 12 WATER JACKET
- NPS 8 SULPHUR PIPELINE
- CENTRALIZER
- SPLIT JACKET AT TIE-IN POINT
- SHEAR RING
DESIGN ISSUES
DOUBLE WALLED PIPELINES

1. Complex stress-strain analysis
   - local stress at bulkheads and spacers
   - different loads
   - different responses to loads

2. Electrolytic corrosion
   - if both pipes are steel

3. Complex interpretation of integrity logs

4. Construction complexity

5. Repair
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