Future Synthesis and Annealing Program in CMPMSD

- Manufacturer: American Isostatic Presses, Inc
- Gas pressure to 100,000 psi, up to 20% Oxygen
- Installation: Chemistry, Site specifically configured for HIP
- Acceptance testing at BNL ongoing
Motivations for Hot Isostatic Press

- Oxygen Annealing for High Temperature Superconductors and for High Pressure Single Crystal Growth.
- Is High $T_c$ primarily a 2D Phenomena occurring in CuO Planes?
- Can $T_c$ be increased by Oxygen Annealing?
- Stored Energy Required ASME, Boiler and Pressure Vessel Code, Section VIII, Division 3
Overview of AIP Hot Isostatic Press

- **Design Pressure**: 110,000 psi at 400°F
- **Operating Pressure**: 100,000 psi at 400°F
- **Hydrotest Pressure**: 137,500-144,375 psi
- **Furnace**: 1200°C
- **Oxygen Annealing**: to 20% Oxygen
- **Vessel Temp Range**: 40 - 400°F
- **Inside Diameter**: 4.998”/5.000”
- **Inside Length**: 16” Nominal
- **Internal Volume**: 0.18 cubic feet
- **Vessel Weight**: 3000 lbs
- **Yoke Weight**: 6,000 lbs
- **Stored Energy**: 2.5 Mega Joules ~ 1 stick of dynamite
Washers may be ground to correct for plate thickness, snug tightness is sufficient.

1/2"-13UNC x 0.88" center of both sides

3/8"-16UNC x 0.63 front and back

3/8" female pipe for coolant

1.25 TYP

1.75

See page 3

15/16"-18

Pressure port for 5/16" x 1/16" tubing.

Thermocouple passages, (2) pair out front

(2) In front

(2) pair out back

Electrode openings, (2) in back

3/8" electrodes

8.00 TYP 12-PLACES

10.50 TYP 12-PLACES

73.38

Front view

Tolerances: 1/8 scale

Related drawings:

VESSLE, VH3100-05-16CY

PROJECT 1176H

9/17/2008

AMERICAN ISOSTATIC PRESSES, INC.

1205 S. COLUMBUS AIRPORT RD.

COLUMBUS, OHIO 43207

9005-001 1
Top Platen
Bottom Platen, Electrodes, TC’s