

# SNL/CA Agency Update

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IMOG Joining Subgroup  
Los Alamos National Lab.  
**January 2007**



**Sandia is a multiprogram laboratory operated by Sandia Corporation, a Lockheed Martin Company, for the United States Department of Energy's National Nuclear Security Administration under Contract DE-AC04-94AL85000.**

# Welding Operations at SNL/CA

✦ 8200 National Security Engineering

◆ 8224 Gas Transfer Systems

- **Manager - Chuck Cadden**

- ◆ **G. Ken Hicken**

- ◆ **Gordon Gibbs**

- ◆ **Tony De Sousa**

- ◆ **Rich Campiotti**

- ◆ **Annette Newman**

# Welding Operations at SNL/CA

✱ 8700 Materials & Engineering Science

◆ 8758 Analytical Materials Science

- **Manager - RION A. CAUSEY**

- ◆ **Joe Puskar**

# **FY07 Joining Activities**

***Gordon Gibbs & Tony De Sousa***

- ✦ Weapons Support
- ✦ Hardware Fabrication
- ✦ Equipment Characterization
- ✦ Weld Acceptance using Data Acquisition
- ✦ Aluminum Pressure Vessel Welding

# FY07 Joining Activities

*G. Ken Hicken*

- ✦ W80 Weld Processes
- ✦ W87 JTA Weld Processes
- ✦ W R Production Liaison
- ✦ Orbital Tube Weld Characterization

# **FY07 Joining Activities**

## ***8758 Engineered Materials Dept.***

### **Beryllium (S-65C) to Copper Alloy (Cu-Cr-Zr) diffusion bonding for ITER fusion reactor in Cadarache France via hot isostatic pressing**

- ◆ The US has reentered after almost a decade
- ◆ Technical Constraints
  - Cu alloy aging temperature restrictions
  - Activation of Metals – No Au or Ag interlayers
  - Service Temperature – No Al interlayers
- ◆ Intermetallics require Ti and Cu layers – currently PVD
- ◆ Significant logistical issues for SNL/CA to handle Be
- ◆ Cu overaging for “realistic joining scenarios” appears to be a big issue
  - Large efforts into understanding CuCrZr aging characteristics

### **Inertia Welding Research**

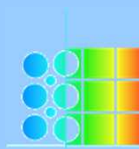
- ◆ Much reduced program to support GTS activities
- ◆ Possible small study of nanocrystalline aluminum alloys

### **Materials Research – 22-13-5 Nitronic 50**

- ◆ Explore the rapid sigma phase formation from ferrite in GTA welds – collaborating with LLNL

### **Other Activities**

- ◆ Expanded support of the GTS welding laboratory
- ◆ Continued technical support for GTS
- ◆ Weld metal mechanical property weldments



# New Equipment

- ✦ Resistance Upset Welder (Upgrades)
- ✦ New Multi-Process Data Acquisition System