

*Advanced Welding and Joining Technical Workshop*

Boulder, Colorado, January 25-26, 2006

**Working Group # 2**  
**Construction**

Roger Howard – BP - Chair  
Nathan Ames – EWI - Facilitator

## **WG #2: Construction**

# **Attendance Breakdown**

Approximate total attendance	16 persons
Federal Regulators	4 persons
State Regulators	0 persons
International Regulators	0 persons
Pipeline Industry	8 persons
Standard Organizations	0 persons
Researchers	3 persons
Academics	1 persons

## **WG #2: Construction**

# **Top 5 Identified Goals**

### **Goal #1 – GMAW Automation**

- Arc dynamics (single wire/tandem)
- Process monitoring
- Start/stop control (stability)
- Seam tracking

### **Goal #2 – Fabrication standards for high strength ( $\geq$ X80) steels and processes**

- X-80 +
- Recommended practices (endorsed by PHMSA/OPS)

### **Goal #3 – End preparation technology**

- Equipment survey to identify a path forward
- Optimize joint design

### **Goal #4 – Laser Hybrid Welding**

- Move towards a production system

### **Goal #5 – Pipeline Construction Tie-In Automation**

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**WG #2: Construction**

**Associated Actions  
(Goal #1)**

**GMAW Automation**

**Regulatory – no impact**

**Technology**

GMAW Automation

Arc dynamics (single wire/tandem) (3 years)

Process monitoring (1 year)

Start/stop control (stability) (1 year)

Seam tracking (3-5 years)

**Consensus Standards**

Process monitoring (1 year)

**General Knowledge**

Educating Industry (3-5 years)

**WG #2: Construction**

# **Associated Actions**

## **(Goal #2)**

### **Fabrication Standards for Steels and Processes**

#### **Regulatory**

N/A

#### **Technology**

Fabrication standards for high strength ( $\geq$  X80) steels and processes (1 year)

Recommended practices (endorsed by PHMSA/OPS) (1-3 years)

*Specialist knowledge already available, but needs to be communicated*

#### **Consensus Standards**

Recommended Practices (1-3 years)

#### **General Knowledge**

Recommended Practices (1-3 years)

**WG #2: Construction**

# **Associated Actions**

## **(Goal #3)**

### **End Preparation Technology**

#### **Regulatory**

N/A

#### **Technology**

Optimize joint design (1-3 years)

#### **Consensus Standards**

N/A

#### **General Knowledge**

Equipment survey to identify a path forward (1 year)

**WG #2: Construction**

# **Associated Actions**

## **(Goal #4)**

### **Laser Hybrid Welding**

#### **Regulatory**

N/A

#### **Technology**

Build and test system (1-3 years)

Demonstration of field production proto-type system (3-5 years)

#### **Consensus Standards**

N/A

#### **General Knowledge**

N/A

**WG #2: Construction**

# **Associated Actions**

## **(Goal #5)**

### **Pipeline Construction Tie-In Automation**

#### **Regulatory**

N/A

#### **Technology**

Establish scope of work (1 year)

Execution (3 years)

Consumable development for high strength steels (1 year)

#### **Consensus Standards**

N/A

#### **General Knowledge**

Survey of existing welding technologies including consumables (1 year)