



# **ROAD TO SUCCESS**

## **Houston Seminar – April 30, 2018**

Proposed Template – Draft 1

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# **Welding and NDT Section 9**

*Presented by Gustavo Guaytima*

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### PRESENTER BIOGRAPHY

Name	• Gustavo Guaytima
Title	• Project Manager
Years Experience	• 15
Company Profile	• TransCanada is one of the mayor pipeline operators in North America

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### WELDING & NDT SECTION 9 & 10

Outline of Topics in Section

1	Introduction
2	Methods and Processes
3	Welding Imperfections
4	Welding and NDT Equipment
5	Safety in Welding and NDT
6	New trends and future Technologies

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### **Summary of the Chapter**

- Welding and NDT are one of the most technical and challenging activities in pipeline construction
- They are directly related to pipeline integrity
- In contrast with other activities, technical aspects and controls could be so in deep and detailed
- The chapters bring a solid technical frame based on experience and good practices
- It brings guidelines for solving practical problems

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### **9.1 -9.3 Introductory sections**

- Presentation of main aspects of welding activity
- List of main terms and stake holders
- Structure and hierarchy organization of standards, codes and project specification.

### **Key Takeaways**

- Broad view of welding activity
- Understand non-technical aspects related to the activity
- Notice the hierarchy and levels of the different documents associated to welding and NDT

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### 9.5 Method and Processes

- Presenting main welding Processes
- Introduce the bases of each welding process
- List of main features of Manual, Mechanized and Automatic welding

### Key Takeaways

- Understand the Pros and Cons of each welding method
- Guideline for choosing a welding method as a function of project's variables



### 9.6 Typical weld imperfections

- Presenting main welding imperfection
- Pipe mill defects and Fitting Problems
  - Out of roundness, laminations, wall thickness and Hi-Lo, forged bends
- Introduce the bases of each indication
- How those indications are detected by NDT

### Key Takeaways

- Introduce how imperfections are produced
- Understand how they affect integrity



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### **9.7 Field Construction Equipment**

- List of main welding equipment (preheating, clamping, welding)
- Introduce the bases of each technology
- Main features of each equipment family

### **Key Takeaways**

- Introduce how main welding equipment work
- Guideline when choosing correct equipment
- Understand pros and cons of similar methods

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### 9.8 Safety & Welding

- List of main hazards associated to welding
- Introduce the bases of each hazard
- Main equipment of personal protection

### Key Takeaways

- Introduce to main welding hazard
- Guideline when choosing EPP
- Understand main precautions to consider in Welding

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### 9.9 Engineering Activities

- List of main activities before starting construction
- Enumerate the tests for welding qualification
- Introduce the bases of method of testing

### Key Takeaways

- Provide a broad view of welding testing
- Understand the basis of each method and its acceptance criteria



### 9.10 Construction Activities

- List of main activities of welding crew during construction
- Presenting the different welding methods and techniques used for root pass and fill passes
- Introduce the bases some technical details of each method and technique

### Key Takeaways

- Facilitate visualization of pros and cons of each method
- Guidance when choosing welding methods
- Provide criteria when choosing among manual, mechanized or automatic welding



### **9.11 New Welding Technology**

- List of the most advanced welding technology in pipeline construction
- Introduction of the basics some technical details of each Technology
- List of trends and future technologies

### **Key Takeaways**

- Broad view of current advanced technology
- Acknowledge of the trends and future technologies

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### **10 NDT**

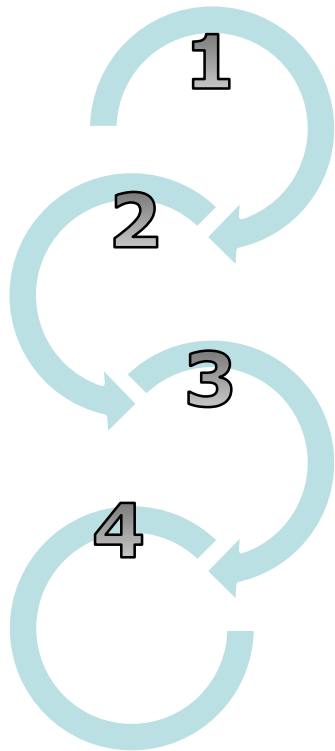
- List of the most used NDT technology in pipeline construction
- Introduction of the bases some technical details of each Technology
- List of trends and future NDT technologies

### Key Takeaways

- Broad view of each technique
- Guidance for understanding pros and cons of each technology
- Visualization of limitations of each technique
- Understand acceptance criteria



### KEY POINTS TO ADDRESS



Up to date Trends

Temporary supports

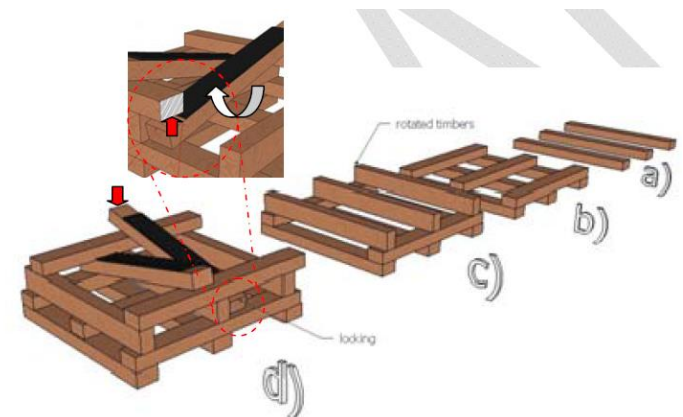
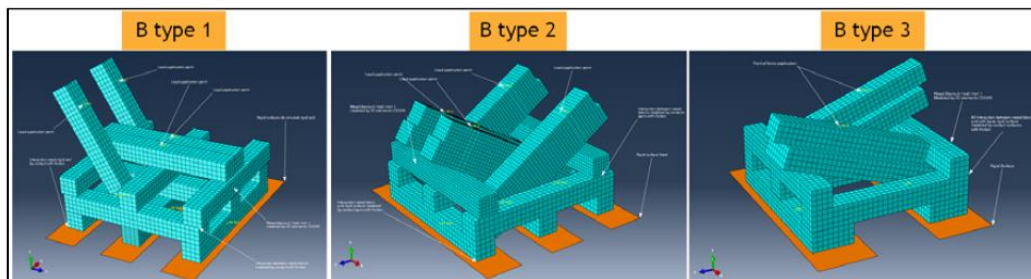
Welding & Sour Service

Welding & Steep Slopes

# Temporary supports



- Establish best practices for wooden cribbing supports
- Present different type of support and compare them
- Do's and Don'ts section
- Studies (FEA) to determine best designs
- Operators (BP TCPL) and Contractor (SAIPEM) are actively involved)





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### CONCLUSIONS

- 1) Welding & NDT chapter has been consolidated
- 2) Chapter brings solid technical background and guidance
- 3) Collaboration of manufacturers, contactors was key
- 4) Participation of pipeline Operators and Owners is necessary
- 5) Such participation will enrich the content of the chapter