Power Planning, The Success To Execution

10-05-15
Agenda

- Safety Topic: Safety Task Analysis
- Corporate Overview
- Project Overview
- Early Implementation
- Site Implementation
- Construction Automation
- Conclusions
- Q&A
Safety Topic

STA Unit 10 CV2 Lift
Fluor Corporate Overview

Integrated EPFC solutions

Fluor is one of the world’s leading engineering, procurement, fabrication, and construction, maintenance, and project management companies.

- Providing Canadian Oil & Gas, Mining, Infrastructure and Power clients with integrated EPFC solutions and applied innovation
- 3000+ Canadian office and site staff
Project Overview

- North West Redwater Partnership is a bitumen refinery. It is designed from the ground up to incorporate gasification, carbon capture and storage solution.

- Phase 1 of a three phase Project, 50,000 barrels per day bitumen blend refinery that will produce diesel, diluent and other products for the Alberta and world markets.

- Fluor peak craft 1500-1600 trades people.

- Expectation is approximately 5000-6000 IWP’s
AWP Early Implementation

- Advanced Work Packaging is a series of processes intended to improve construction performance from concept to completion.

- Advanced Work Packaging requires strategic early planning and a focused project structure.

- In order to accomplish a successful WorkFace Planning program, it is necessary to alter processes in the front end through AWP.

- Increase the flexibility of the Project Management Team to evolve and adapt to AWP processes.

- Advanced Work Packaging early implementation includes WorkFace Planning and WorkFace Planning Pre-requisites.
AWP Early Implementation

The following activities are required for the successful implementation of AWP to support WFP during the execution stages of the Project.

- Engineering Work Packages Driven by Construction.
- Project Controls aligned with Path of Construction.
- Procurement and Supply based on Construction requirements.
- Contract Management to support Construction execution.
The project team will require training to Support AWP principles.

Construction input during FEED to ensure that Engineering supports Effective construction execution.

Developing an EWP release plan based on Path of Construction (POC).

Delivering Engineering Data according to company Standards to support Construction Automation.
Power Planning - Project Controls

- Early identification of estimate requirements to support IWP Development.
- Support the Management of Change Program.
- During FEED Construction input is critical to the development of a logic driven schedule.
- Improved productivity and predictability of progress.
Power Planning - Contract Management

- Contract language to clearly define and enforce AWP/WFP.

- Early Identification of Required contracts to Support Heavy Lift Program.

- Extensive review of scope definition for contract information.

- Engagement from past and current projects to avoid changes in contract scope.
Power Planning - Procurement

- Develop the Procurement Plan based on POC.
- Identification of Long Lead Materials and Equipment to support Construction Execution.
- Identification of Data requirements from Vendors to support Construction Automation.
- Incorporation of Scaffold Solutions into steel fabrication.
AWP The Success To Execution

- Improved cost performance between 15 - 18 %
- Predictable Work Flow
- Development of Craft Training
- Progressive Turnover
- Project performance

“Planning with the End in Mind”.
WFP Implementation Requirements

- Senior Management support.
- Early Identification of Staffing Plan.
- IWP Project Specific Documentation
- IWP Template Preparation.
- Audit Process Development.
- Readiness Review.
Transition and Site Implementation

- WorkFace Planning Driven Construction

- We have developed a WFP Orientation to ensure that Craft and Supervisors are trained on proper use of the tool and understanding its purpose and limits.

- Worker engagement in WorkFace Planning Program to understand that they are an instrumental part of the development and improvement of this process.

- Resource coordination and constraint mitigation:
  - Equipment
  - Material Management
  - QA/QC Requirements
  - Engineering Requirements
  - HSE Requirements

- IWP integration (construction superintendent)
What is Automation to AWP?

- Automation is an IT function to optimize a work process being executed.

- Automation attempts to map a specific work process and remove obstacles, add efficiencies and improve results.

- Automation, when applied to WFP, can be seen as:
  - “Ambitious” in analyzing and taking on many factors.
  - “Fragile” in many of these factors have significant risks and critical impacts.
  - “Unfriendly” situation as in many cases in position of adjusting established department work processes and challenges/changes are not always easily taken.
Automation Equation

INPUT

DATA

WORK PROCESSES

CLEAR INTERPRETATIONS

+ PROCESSING

HARDWARE & SOFTWARE

AUDIT PROCESS

= OUTPUT

DESIRED OUTPUT

OPTIMIZED WORK PROCESSES

OBJECTIVE REALIZED
Automation Equation – Implemented

1. Configuration
   - WFP project requirements
   - SP3d model
   - SP3d drawings (ISOs)
   - Electrical / Instrumentation Cable Schedules

2. Design data
   - Estimate
   - Schedule

3. Controlled Documents
   - Materials Status
   - Material Manager API
   - SP3d drawings

4. Identify & Manage
   - Material Constraint
   - Document Constraint
   - Labour Constraint
   - Material Picklist
   - Controlled Issued Drawings

5. WFP output
   - Work steps

6. Goal
   = Optimized Crew Productivity

FLUOR®
SmartPlant Construction
Engineering model
# SmartPlant Construction Materials

![Image of SmartPlant Construction Materials interface](image)

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Conclusion

➢ BENEFITS OF AWP

➢ Increased Visibility and Predictability of Construction Execution.
➢ Improved safety performance
➢ Improved cost performance between 15 -18 %
➢ Improved schedule performance
➢ Substantial reduction in RFI’s
➢ Incorporation of Turnover and Commissioning requirements.
➢ Opportunities for Automation to add value to AWP

“Power Planning, The Success To Execution”.

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QUESTIONS

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