Southern Company’s AWP Implementation – 24 Months and Counting

Justin Weaver – AWP Project Manager
2017 AWP Conference
October 11, 2017
About Me

17 years with Southern Company

Currently: Performance Improvement PM

Positions in Engineering, Construction Management, Project Management on Power Plant EPC Projects

Focus: AWP Implementation
Goals for Today

Tell Southern Company AWP Story

Help Owners and EPCs
Timeline Refresher

2015
- Internal socialization of AWP concepts
- Begin business case development

2016
- Decision to implement
- Program development
- Initial training
- Internal AWP Tool Development “WolfPack”

2017
- Program refinement
- WolfPack tool in production
- Training program development
- Planning for future improvements
What’s Changed from 2016 to 2017?
# Projects Performing AWP

<table>
<thead>
<tr>
<th>Site</th>
<th>Number of Projects</th>
<th>E</th>
<th>P</th>
<th>CM</th>
<th>IC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bowen</td>
<td>3</td>
<td>In-house</td>
<td>In-house</td>
<td>In-house</td>
<td>Contractor</td>
</tr>
<tr>
<td>Gorgas</td>
<td>2</td>
<td>In-house</td>
<td>In-house</td>
<td>In-house</td>
<td>Contractor</td>
</tr>
<tr>
<td>Gaston</td>
<td>2</td>
<td>In-house</td>
<td>In-house</td>
<td>In-house</td>
<td>Contractor</td>
</tr>
<tr>
<td>Miller</td>
<td>2</td>
<td>In-house</td>
<td>In-house</td>
<td>In-house</td>
<td>Contractor</td>
</tr>
<tr>
<td>Scherer</td>
<td>2</td>
<td>Outsourced</td>
<td>In-house</td>
<td>Outsourced</td>
<td>Contractor</td>
</tr>
<tr>
<td>Barry</td>
<td>2</td>
<td>Outsourced</td>
<td>Outsourced</td>
<td>In-house</td>
<td>Contractor</td>
</tr>
<tr>
<td>Wansley</td>
<td>2</td>
<td>In-house</td>
<td>In-house</td>
<td>In-house</td>
<td>Contractor</td>
</tr>
</tbody>
</table>

**Total:** 16

- **Major scope cuts:** AWP
- **Opted out:** AWP

- **Outsourced:** AWP

- **In-house:** AWP

- **Contractor:** AWP

- **Outsourced:** AWP
### Costs 2016 vs 2017

<table>
<thead>
<tr>
<th></th>
<th>2016 Estimate</th>
<th>2017 To Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>AWP Project Manager, Consulting, Technology</td>
<td>$1,000,000</td>
<td>$900,000</td>
</tr>
<tr>
<td>Contractor WFP</td>
<td>$3,000,000</td>
<td>$0</td>
</tr>
<tr>
<td></td>
<td><strong>$4,000,000</strong></td>
<td><strong>$900,000</strong></td>
</tr>
</tbody>
</table>
Benefits 2016 vs 2017

- **Plant Bowen DFA Project**: $5.9M Saved
- **Plant Scherer Projects**
  - Worley Parsons: E & CM
  - Zachry: Installation Contractor
- **Plant Barry Projects**
  - Black & Veatch

**DIRECT LABOR PRODUCTIVITY INCREASE**

- Costs
- Savings

Better project planning, accountability, responsiveness

Predictability of project performance, timeliness of deliverables

If everything is in a package, nothing gets left out
ROI To Date

• We only have verifiable savings data from one in-flight project:

\[
\frac{5.9\text{M savings}}{900\text{k investment}} = 656\% \text{ return}
\]

What if ... ?!
Bowen Case Study
## The Plant Bowen Case Study

<table>
<thead>
<tr>
<th>Project</th>
<th>EPCM</th>
<th>Installation Contractors</th>
<th>AWP Tools</th>
<th>Contracting Strategy</th>
<th>Total CWPs</th>
<th>CWPs Issued</th>
<th>WFP?</th>
</tr>
</thead>
<tbody>
<tr>
<td>DFA</td>
<td>Southern</td>
<td>Fluor NSC Cleveland</td>
<td>Excel &amp; Word</td>
<td>Master Labor Agreement w/ Individual Lump Sum CWPs</td>
<td>60</td>
<td>60</td>
<td>No</td>
</tr>
<tr>
<td>DBA</td>
<td>Southern</td>
<td>Fluor NSC Cleveland</td>
<td>Excel &amp; Word</td>
<td></td>
<td>69</td>
<td>11</td>
<td>No</td>
</tr>
<tr>
<td>WWM</td>
<td>Southern</td>
<td>TBD</td>
<td>WolfPack</td>
<td></td>
<td>51</td>
<td>0</td>
<td>No</td>
</tr>
</tbody>
</table>

**Focus:** building strong CWPs.  
Scope + Documents.
# AWP Using a Spreadsheet and Word Docs

## Construction Work Package (CWP)

<table>
<thead>
<tr>
<th>ID</th>
<th>Detailed Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>43</td>
<td>Install Cable Bus System in CWA04</td>
</tr>
<tr>
<td>44</td>
<td>Install Cable Bus System in CWA09</td>
</tr>
<tr>
<td>55</td>
<td>Unit 1 &amp; 2 C&amp;D Vacuum Blowers</td>
</tr>
<tr>
<td>56</td>
<td>Unit 3 &amp; 4 Vacuum Blowers and Spares</td>
</tr>
<tr>
<td>57</td>
<td>Unit 3 &amp; 4 Collectors and Dense Phase Vessels</td>
</tr>
<tr>
<td>58</td>
<td>Transport Air Compressors</td>
</tr>
<tr>
<td>59</td>
<td>Unit 1-4 Instrument Air Compressor Package</td>
</tr>
<tr>
<td>60</td>
<td>Unit 1 &amp; 2 C&amp;D Collectors and Dense Phase Vessels</td>
</tr>
<tr>
<td>61</td>
<td>Instrument Air Piping</td>
</tr>
<tr>
<td>62</td>
<td>Instrument Air Piping</td>
</tr>
<tr>
<td>63</td>
<td>Transport Air Compressor Dryers and Receiver</td>
</tr>
<tr>
<td>64</td>
<td>Instrument Air Piping</td>
</tr>
<tr>
<td>65</td>
<td>Unit 2 A&amp;B Vacuum Blowers</td>
</tr>
<tr>
<td>66</td>
<td>Pressure Convey Piping</td>
</tr>
<tr>
<td>67</td>
<td>Pressure Convey Piping</td>
</tr>
</tbody>
</table>
Plant Bowen: Results

DFA Project

- CWPs are constraint-free / 100% engineered / fully estimated
- Contractor submits a price for the CWP
- Every CWP proposal is reviewed with the contractor
- Uncertainty is eliminated and contingency is removed from the price

Net savings of $\textbf{5.9M}$ on 60 CWPs

\textbf{4.2\%} of TIC
Current Technical Architecture and WolfPack
WolfPack: Features and Gaps

Features
- Project Planning
- Package Assembly – Document-to-package
- Package Workflow

Gaps
- Equipment-to-package association
- Quantity summarization
- Automated estimation of manhours, costs
- Performance dashboards
Project Planning in WolfPack

- WolfPack is a web-based tool that facilitates collaborative project planning.
- WolfPack:
  - Is a database that manages all AWP codes
  - Is a place for project teams to create and manage any type of work package
  - The new repository for contracting strategy and procurement strategy information
Looking Forward
Looking Forward

- Continued project-by-project adoption of AWP
- Training, communications
- Technology improvements
Future Technical Architecture

AVEVA Integrated Eng. & Design
- Deliverable Production
- Equipment-to-package assembly

WolfPack
- Package Planning, Development, Workflow, Tracking

Documentum
- Doc Repository
- Doc-to-Pkg Attribution

Maximo
- P2P
- POs
- EV
- Mat Mgt

Maximo
- Project SharePoint

AVEVA ERM
- Statusing

AVEVA Net
- Data Backbone

Doc Repository
- Pkg List
- Packages

Project SharePoint
- Other Docs
- Pkg List

AVEVA Engage
- Sched
- Visualization

AVEVA P6
- Pkg Contents
- Pkg Lists

AVEVA Packages
- Deliverable Production
- Equipment-to-package assembly

Report
- Pkg Contents
- Pkg Lists

Data
- Pkg Contents
- Pkg Lists

Other Docs
- Pkg Contents
- Pkg Lists

Pkg Lists
- Pkg Contents
- Pkg Lists
Lessons Learned Thus Far
Lessons Learned

Not everybody understands that AWP is different from WFP

- We are responsible for AWP, contractors do WFP
- We can do AWP without WFP

Hammer Home Key Knowledge Concepts

1. The concept of an individual package lifecycle
2. Alignment of package lifecycles with the project lifecycle
3. Expected Outputs of IPP
Concept 1: General Package Lifecycle
Concept 2: Package Lifecycle vs Project Lifecycle

PDP Phase:

Planning and Execution Workflow:

Initialize → Develop → Execute
**Concept 3: Outputs of IPP**

Upon completion of Project Definition, the project team will have produced:

<table>
<thead>
<tr>
<th>Output</th>
</tr>
</thead>
<tbody>
<tr>
<td>CWA list</td>
</tr>
<tr>
<td>CWP list – full scope of project</td>
</tr>
<tr>
<td>EWP list – full engineering scope of project</td>
</tr>
<tr>
<td>LWP list – labor contracting strategy</td>
</tr>
<tr>
<td>PWP list – procurement strategy</td>
</tr>
<tr>
<td>TOP list – startup system strategy</td>
</tr>
<tr>
<td>Paths of Construction, Engineering, Procurement, and Startup</td>
</tr>
<tr>
<td>Level 2 schedule showing all packages and dependencies</td>
</tr>
<tr>
<td>Quantity, work hour, and cost, estimate for each CWP</td>
</tr>
</tbody>
</table>
Lessons Learned

Don’t Build Your Own Software

• Too long and too costly
• There are now light and effective products on the market
Lessons Learned

Culture change is the hardest part.

People will look for any reason not to do AWP

- “We design by system, not by area” is a fundamental struggle for engineers
- “What do you do about cables and pipes that cross area boundaries?”
Lessons Learned

The maturity timeline is a long one

• Our projects take a long time to complete
• Need to get deep into a project to realize benefits
• Other people need to see those before they really get on board
• Bottom line: this is a huge ship to turn. We expect a full AWP implementation to take five or more years.

AWP is a win for Southern Company.

We have a long way to go.

We are excited for the future.

This is a learning journey.

• We didn’t get the benefits we expected.
• We got the benefits we didn’t expect.