The Path to Our AWP Playbook

Scan here to learn more about AWP at Black & Veatch

Mike King
Reggie Hoog

Michael King has more than 20 years of diverse experience in the Power industry working on EPC, EPCM, and C-only projects. He is a Project Manager with Black & Veatch, providing leadership and direction for the development of processes, training, and project implementation support related to AWP. King is a licensed professional engineer in the state of Iowa.

Reggie Hoog has 23 years of work experience in the engineering industry and is currently employed at Black & Veatch. During the last 17 years with Black & Veatch he has worked on various Power Generation E, EP, and EPC projects. Reggie is the Power and Oil & Gas Civil/Structural Chief Engineer as well as the AWP Multi-discipline Engineering Manager supporting the implementation of AWP.
AGENDA

- Safety Moment
- Implementation Journey
- B&V AWP Playbook
- Open Discussion

Dropped Object

Prevention Checklist

- Tool lanyards
- Tool holsters with straps
- Spill control buckets
- Implement a documented program tool fall protection.
BLACK & VEATCH AWP IMPLEMENTATION

Markets

- Power
- Oil & Gas
- Telecom
- Data Centers
- Mining
- Banking & Finance
- Governments
- Smart Cities
- Water

11,000+ professionals
110 offices
6 continents

$3.4 Billion in revenue in 2017
7,000 active projects worldwide

AWP PLAY BOOK

ADVANCED WORK PACKAGING

- FRONT END PLANNING
  - Stage I
    - RFP to NTP
- WORKFACE PLANNING
  - Stage II
    - NTP to Mobilization +
- Construction Execution

- FEP Implementation Manual
- WFP Implementation Manual
- WFP Implementation Manual - Scalable
AWP PLAY BOOK JOURNEY

FRONT-END PLANNING

Construction Focus

Initial Work Breakdown Structure
Initial IWP Process
Technology Version 1.0
Limited, JIT
1 Pilot Project

WORKFACE PLANNING

View of AWP / Organizational Change • Work Process & Deliverables • Training • Project AWP Strategy

WORK PROCESSES & DELIVERABLES

Initial Work Breakdown Structure (CWA, CWP, etc.) • Initial IWP Process
AWP PLAY BOOK JOURNEY

FRONT-END PLANNING

IWP Process Continuous Improvement
Technology Version 2.0
Training Integrated with Process and Technology
2 Additional Projects

WORKFACE PLANNING

View of AWP / Organizational Change ● Work Process & Deliverables ● Training ● Project AWP Strategy

WORK PROCESSES & DELIVERABLES

IWP Process Continuous Improvement

- IWP Process Swim Lane
  - Step descriptions & timing
  - Roles and Responsibilities

- Job Descriptions
  - WorkFace Planner
  - Construction Coordinator

- Work Breakdown Structure
  - Standard CWA List / Number
  - Standard CWP List / Number
WORK PROCESSES & DELIVERABLES

<table>
<thead>
<tr>
<th>IWP</th>
<th>SCOPE</th>
<th>ENGINEERING</th>
<th>WORK INSTRUCTIONS</th>
<th>BUDGET</th>
<th>MATERIAL</th>
<th>EQUIPMENT &amp; TOOLS</th>
<th>QUALITY</th>
<th>SAFETY</th>
<th>FINAL CHECK</th>
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<th>CLOSEOUT / LESSONS LEARNED</th>
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CONTRAINT-FREE  CONSTRAINED

AWP PLAY BOOK JOURNEY

FRONT-END PLANNING

Estimating & Proposals Involvement
Engineering Involvement
AWP Readiness Review
Leadership Endorsement

WORKFACE PLANNING

View of AWP / Organizational Change  Work Process & Deliverables  Training  Project AWP Strategy
VIEW OF AWP / ORGANIZATION CHANGE

Leadership Endorsement

B & V Senior Leadership Views AWP As a Way to Improve Alignment Between Engineering, Procurement, and Construction While Improving Project Efficiency and Effectiveness, Reducing Costs, Improving Schedule Performance, and Improving Safety and Quality.

2016 Senior Management Survey for AWP Readiness
AWP PLAY BOOK JOURNEY

FRONT-END PLANNING

WFP Project Success Story

IWP Process Continuous Improvement

3 Additional Projects

6 Additional Pilot Projects (Scalable)

WORKFACE PLANNING

VIEW OF AWP / ORGANIZATION CHANGE

WFP Project Success Story

Safety: Zero First Aids on IWPs.

Collaboration / Team Enthusiasm:
Driving Healthy Competition. Crews Have High Morale.

Quality: One NCR.

Productivity / Predictability:
• Below Grade Electrical Improved +30%.
• Cable Pulls / Terms Improved +18%.

Cost:
• Optimized Construction Equipment & Craft Count.
AWP PLAY BOOK JOURNEY

FRONT-END PLANNING

Procurement Involvement
Support Group(s) Involvement
Cross Functional Group Workshops
AWP Strategy (3 Year)
AWP Tactical Plan
Technology Plan
AWP Video

View of AWP / Organizational Change
• Work Process & Deliverables
• Training
• Project AWP Strategy

WORK PROCESSES & DELIVERABLES

AWP Strategic Plan (3 Year)
AWP Tactical Plan
Cross Functional Group Workshops

Continuous Improvement 2019 - 2020
Project Support 2018
Project Implementation 2017
Training Development & Delivery 2016
Develop Process and Procedures
Culture Change Management
Leadership Ownership

Construction & Startup
Estimating & Proposals
Engineering
Proc. & Mat'l Mgmt.
Project Controls

Execution Processes, AWP Maturity Model
**AWP PLAY BOOK JOURNEY**

**FRONT-END PLANNING**

- WFP Project Assessments
- WFP Implementation Manual
- WFP Implementation Manual (Scalable)
- Expanding Training Audience
- 5 Additional Projects (Scalable)

**WORKFACE PLANNING**

**ADVANCED WORK PACKAGING**

- FRONT END PLANNING
  - Proposal Creation
  - CWA/CWP Scope Matrix
  - Preliminary Path of Construction
- WORKFACE PLANNING
  - IWP Development & Release
  - Construction Execution
  - Commissioning & Start-Up

**View of AWP / Organizational Change**

- Work Process & Deliverables
- Training
- Project AWP Strategy
WORKFACE PLANNING IMPLEMENTATION MANUAL

- IWP List and Sequence
- Collaborative Constraint Removal
- 3 Month Schedule Review
- 6 Week Look Ahead, 1 Week Look Ahead
- Readiness Reviews
- Crew Feedback Process / Improvement Huddle
- IWP Closeout
- Turnover to Startup and Commissioning

AWP PLAY BOOK JOURNEY

FRONT-END PLANNING

FEP Implementation Manual
Develop / Implement FEP Training
Engineering Work Package Procedure
2 Planned Projects
- CWA List, Descriptions, and Area Arrangement
- CWP List and Descriptions
- CWA x CWP Scope Matrix
- Procurement Matrix with AWP Attributes
- Path of Construction by CWA and CWP
- Level 1-2 Schedule
FRONT-END PLANNING IMPLEMENTATION MANUAL

- Area Driven Fragnets
- CWA and CWP Ties
- Align to Path of Construction
- Procurements Needed by Area
- Engineering Deliverables Needed by Area

Begin With the End In Mind.

FRONT-END PLANNING IMPLEMENTATION MANUAL

- Engineering Work Package Procedure
  - EWP Matrix
  - EWP Template
  - EWP Review/Issue
  - EWP Status
  - EWP Complete

Begin With the End In Mind.
• Supplier Submittals.

• Pricing, Release, and Delivery.

• Tracking.

Begin With the End In Mind.

• Attribute Association
  • Engineering Drawings & Lists
  • Specifications
  • Supplier Submittals
  • Component level

Begin With the End In Mind.
AWP PLAY BOOK

ADVANCED WORK PACKAGING

FRONT END PLANNING

Stage I
RFP to NTP

Stage II
NTP to Mobilization +

FEP STAGE I
- Project Execution Plan
- CWA List & Descriptions
- General Arrangement with CWAs
- CWP List & Descriptions
- CWA / CWP Scope Matrix
- Path of Construction
- Configured Schedule
- Procurement Plan / Matrix
- Proposal Engineering with CWA/CWP
- Configured Estimate

FEP Implementation Manual

AWP PLAY BOOK

ADVANCED WORK PACKAGING

FRONT END PLANNING

Stage I
RFP to NTP

Stage II
NTP to Mobilization +

FEP STAGE II
- Name Project AWP Champion
- Project Specific FEP Plan
- Training
- Refine CWA/CWP Scope Definitions
- EWP Matrix / List
- PWP Matrix / List
- Integrated Phase Planning
- Baseline Schedule
- Technology Plan
- EWP / PWP IFC (Staged)
- CWP Deliverables / Readiness

FEP Implementation Manual

WFP Implementation Manual - Scalable
AWP PLAY BOOK

ADVANCED WORK PACKAGING

WORKFACE PLANNING

- Name Project WFP Champion
- Project Specific WFP Plan
- Training
- IWP Release Plan
- IWP Readiness
- IWP Closeout
- Construction CTO

Stage I
RFP to NTP

Stage II
Mobilization + Construction Execution

FEP Implementation Manual
WFP Implementation Manual
WFP Implementation Manual - Scalable

WORKFACE PLANNING

AWP PLAY BOOK – BLACK & VEATCH

- Project Implementation & Support ✔
- Training Development and Delivery ✔
- Processes and Deliverables ✔
- Leadership Ownership / Culture Change ✔

Introductory & Project Specific Workshops

Strategy Resources Tactical Plan
BUILDING A WORLD OF DIFFERENCE

Open Discussion