



ASTM E2500 Lessons Learned

*The Good, The Bad and The Ugly on
Implementing a New Approach*

Agenda

- Project Background
- Execution Strategy
- Lessons Learned
- Best Practices



Project Background

- Renovation and expansion of an existing processing suite
 - Suite was never released for production
 - Support product transfer
 - Upstream process
 - Modifications to an existing Seed and Production Bioreactor
 - New control system
 - New centrifuge and powder transfer system
 - Modifications to existing harvest tank farm
 - New media and buffer prep tank farm
 - Controls
 - New down stream process equipment
 - Chromatography columns

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Project Background

- Utilities
 - Modifications to USP water & WFI systems
 - New Clean Steam Generation and Distribution System
 - Expansion of plant utilities
 - New AHU for process areas
 - Control system
 - Separate Data historian and alarm
- Facility
 - New processing suites

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Project Background

- Project Driver
 - Schedule
 - 7 months to complete construction, commissioning and verify equipment fit for intended use
 - 1st engineering run May 2008

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Project Background

- Compliance
 - Client had good history of compliance
 - No non-compliant observations from recent FDA or customer audits
 - Sites Validation Staff had strong technical knowledge about equipment and systems

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Execution Strategy

- Use an ASTM E 2500 approach to meet schedule
 - Focus efforts on making sure system/equipment meet installation and performance requirements
 - Reduce redundant testing and documentation
 - Eliminate effort on addressing “protocol deviations”
- Integrate with Construction
 - CQV team responsible for construction QA and startup activities
- Team Approach
 - Comprised of Project, and Client’s Operations, Maintenance and Validation Personnel

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Execution Strategy

- Requirements Definition
 - Project URS, Batch Record and SOP’s used to develop downstream documents
 - Site Procedures allowed use of ASTM E2500
- Specification and Design
 - Critical attributes identified in specifications and drawings
 - Documentation requirements for OEM’s and Contractors
 - Design review and approval of P&ID’s, ISO’s and OEM/Contractor submittals

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Execution Strategy

- Verification
 - Commissioning
 - Information and data used to verify fit for intended use.
 - Activities
 - Skid: Mechanical & Electrical Inspection, FAT,
 - Field: Progressive installation verification walk downs, Construction QA results
 - Site Acceptance Testing

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Execution Strategy

- Verification
 - Documentation
 - Inspection reports
 - Construction QA Results & As-built Drawings
 - FAT & SAT documents
 - Commissioning protocol
 - Engineering field reports
 - Punch list
 - Record of the issues and resolutions

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Execution Strategy

- Verification
 - Review
 - Progressive review of Commissioning documents
 - Final approval of document by client's validation staff
 - Acceptance and Release
 - IOQ Protocol format
 - Referenced commissioning data, system SOPs, training, and calibrations

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Execution Strategy

- Verification
 - Acceptance and Release
 - IOQ Protocol format
 - Review of commissioning data, system SOPs, training records, and calibration data
 - Included performance testing for certain systems
 - Contained a "Release for Use" Statement
 - Approved by Client: Quality, System Owner, Validation

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Lesson Learned

- The Importance of Design Review
 - Problems with existing systems and equipment
 - In-depth review to identify risks and develop mitigation plans
 - As-built inspections
 - Performance testing (water or mock runs)
 - Review of life-cycle information
 - No problems report on new equipment

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Lessons Learned

- If you always do what you always did, you'll always get what you already got.
 - Hard to get stakeholders to feel comfortable with new approach
 - Tendency to migrate to previous methods
 - Quality documentation does not make up for bad design or poor fabrication/installation

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Lessons Learned

- Be a Good Consumer
 - Clearly define what the OEMs and Contractors are responsible for:
 - Design, Submittals, Quality and Acceptance Testing, and Documentation
 - Track performance
 - Do not over or under buy

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Lessons Learned

- Importance of Subject Matter Experts
 - New control program for bioreactors did not meet process expectations
 - Client did not have expert to work with automation contractor
 - Approved requirements and specifications did not meet process requirements

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Best Practice

- Team Approach
 - Four teams based on functional areas
 - Fermentation, Purification, Media/Buffer & Facility/Utilities
 - Responsibilities:
 - Commissioning and Verification activities for systems/equipment within area
 - Coordinating activities with construction and OEM
 - Including issue resolution

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Best Practice

- Team Approach
 - Structure
 - CQV Specialist(s)
 - Engineering expert (SME/Designer)
 - Operation Representatives
 - Maintenance Representatives
 - One member of the team was the leader
 - Coordinated activities and efforts

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Best Practice

- System Specific Punch Lists
 - Tool to document history
 - Progress of Installation/Fabrication
 - Installation and performance issues and resolutions identified during commissioning
 - Support life-cycle design reviews
 - Managed by the team

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**There is nothing wrong with
change, if it is in the right
direction**

Winston Churchill

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Thank you

Questions?

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