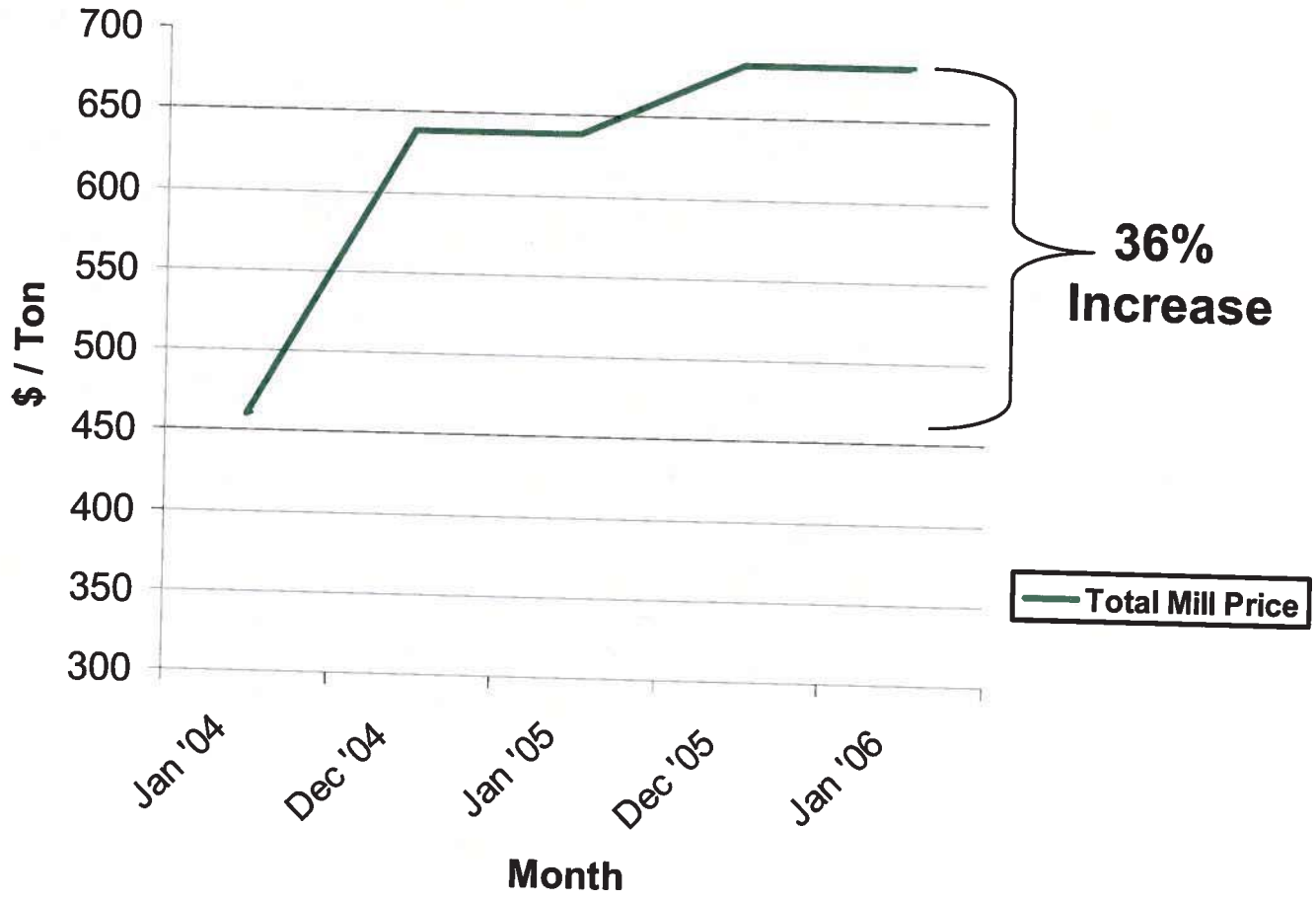
Escalation Summary – Market and Sourcing

Increasing Coal Plant Costs

- Price Escalation on Commodities Such as Steel, Copper and Alloy Have Driven Prices and Lead Times Up Dramatically
- AQCS Equipment Extremely Tight Market Due to Ongoing Retrofit Work (30% Materials Required)
- Boiler Prices Increasing (30% Materials Required)

The E&C Industry Is Also "Tight" With a Limited Number of Capable Players

Escalation Example – Steel



0217

Schedule KMR2010-19

Escalation – Labor

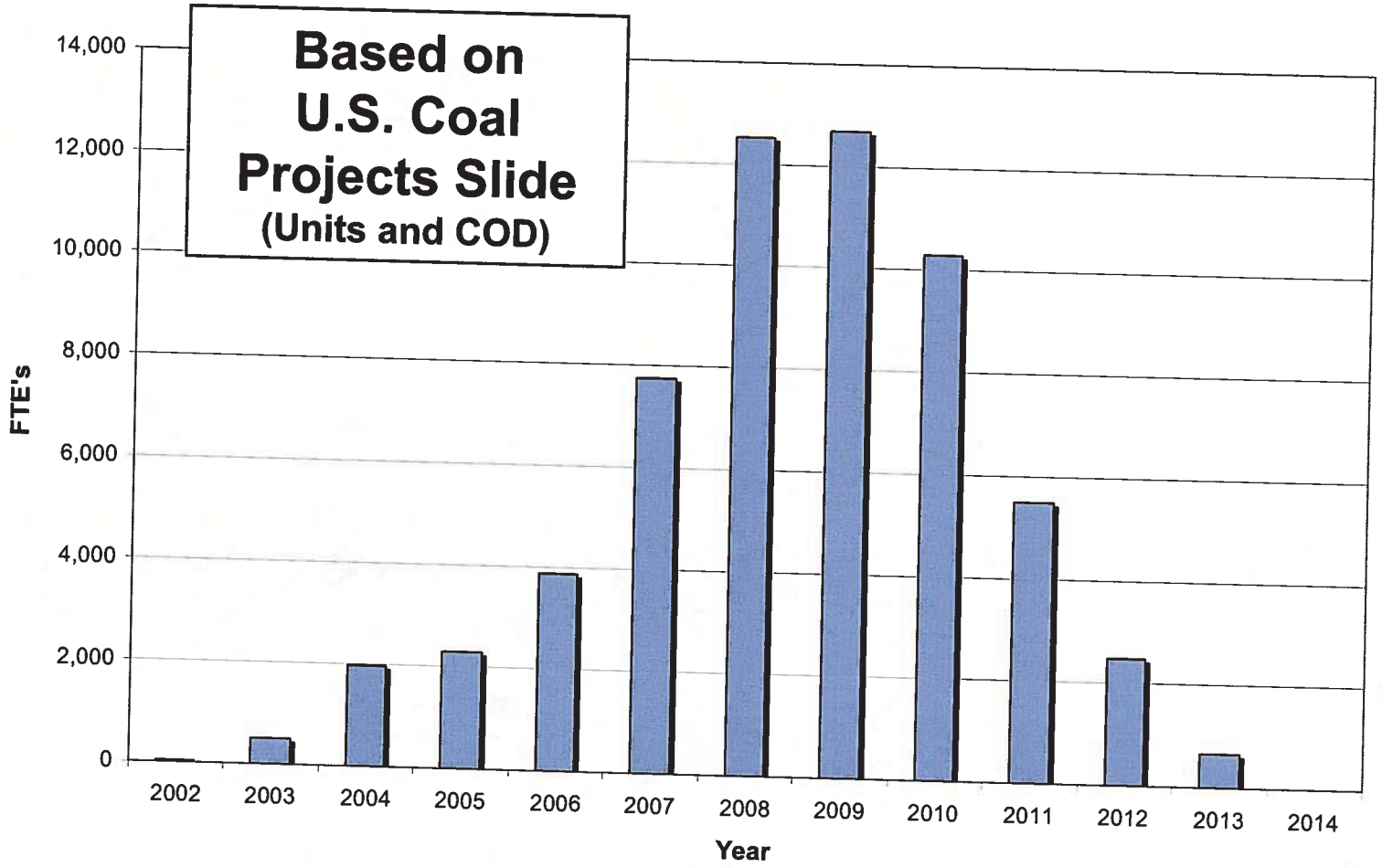
As-Stated Escalation Rates for Midwest Coal Project

Craft	2005 Rate	2006 Rate	2007 Rate	Annual Escalation Rate
Operators	$28.06	$29.56	$31.06*	5.3%
Laborers	$19.50	$20.70	$21.90*	6.1%
Millwright	$30.00	$31.85	$33.70	6.2%
Ironworker	$25.10	$26.95	$28.80	7.4%
Carpenter	$25.65	$27.50	$29.35	7.2%
Pipefitter	$32.73	$34.83	$36.93	6.4%
Electricians	$30.73	$32.58*	$34.43*	6.0%
Boilermaker	$27.80	$28.60	$30.10	5.2%
			Average	**6.2%**

***Future Estimate**

Schedule 02-18R2010-19

Total Craft Labor Full Time Equivalents (FTEs)



Schedule KMR2010-19 0219

Equipment Suppliers – Boilers

Domestic Based

- Alstom Power
- Babcock & Wilcox
- Foster Wheeler
- Babcock Power

International Based

- IHI, Inc.
- Mitsubishi Power
- Mitsui Babcock
- Babcock Hitachi

Schedule 22.0 KMR2010-19

Equipment Suppliers – STGs

- Alstom Power
- General Electric
- Mitsubishi Power
- Siemens Westinghouse
- Toshiba
- Hitachi
- Fuji

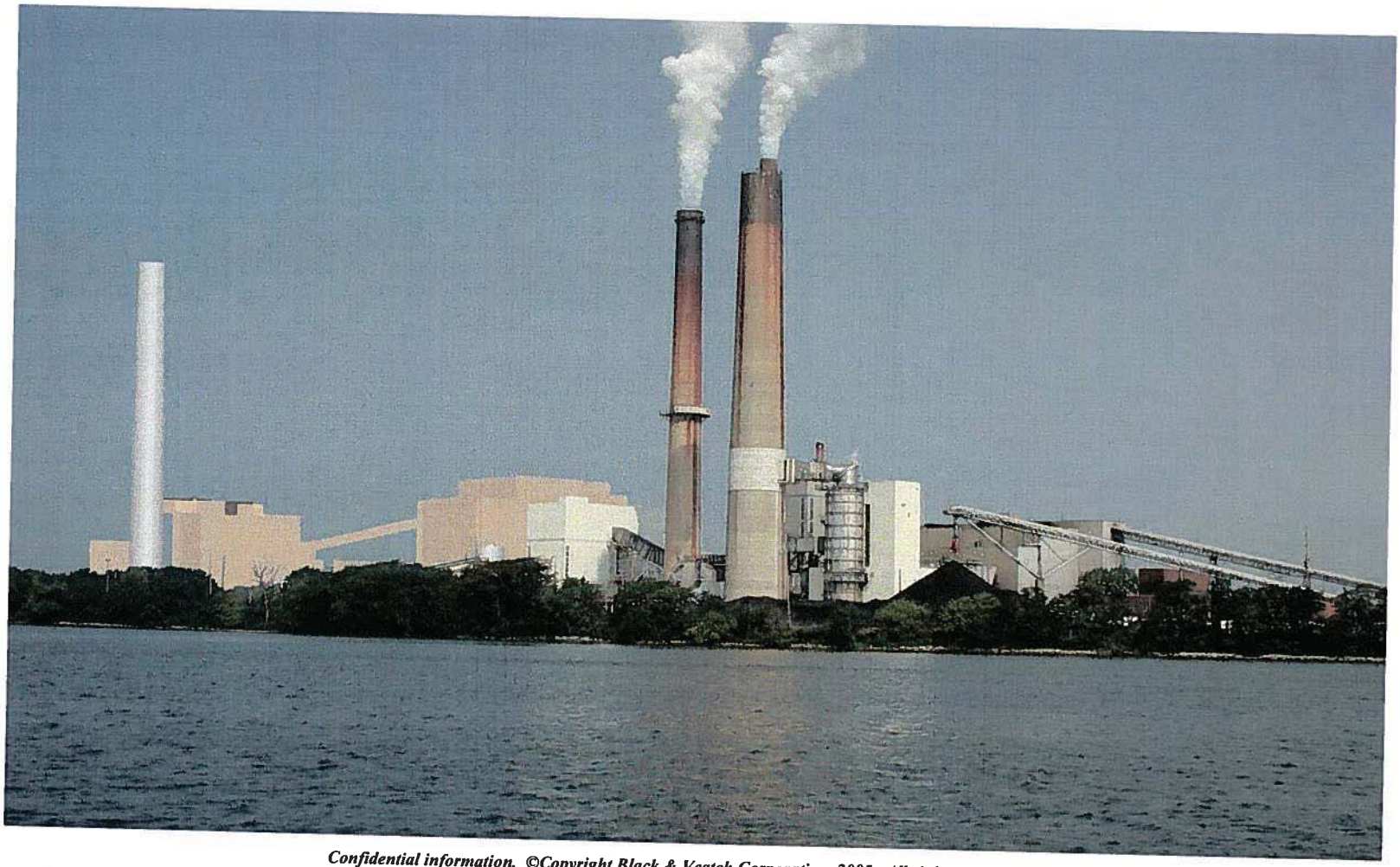
Schedule KMR2010-19 0221

Equipment Suppliers – FGD, Fabric Filters and Electrostatic Precipitators

	Dry FGD	Wet FGD	FF	Dry ESP	Wet ESP
Alstom Power	X	X	X	X	X
Babcock Power	X	X			
Babcock & Wilcox	X	X	X	X	X
Chiyoda		X			
Hamon RC	X		X	X	
Hitachi		X			
Wheelabrator	X	X	X	X	X
AdvaTech (MHI & URS)		X			
Marsulex		X			

0222
Schedule KMR2010-19

CWLP Dallman 34, Springfield, Illinois



WE BRING IT ALL TOGETHER

Presentation to KCP&L for Iatan 2 Expansion Project

November 8, 2005

BLACK & VEATCH

Building a world of difference

ENERGY WATER INFORMATION GOVERNMENT

TABLE OF CONTENTS

1/0/05

October 27, 2005

AGENDA FOR DISCUSSION
IATAN 2 AND IATAN 1 AQC OWNERS ENGINEER REVIEW

KCP&L is expecting to file its final air and wetland permits in early 2006, which would allow construction to begin. KCP&L has an agreement with both the MPSC and the KCC regarding these projects. These agreements are: a.) Iatan 2 is expected to meet its "in-service test criteria" by June 30, 2010; b.) Prior to Unit 2 coming on line, Unit 1 will meet its NSPS, so that the emissions from both units are no greater than the Iatan 1 current emissions (for SO_x and NO_x). The Iatan 1 AQC cut in needs to marry up with a scheduled Turbine outage, which is scheduled for 56 days ends mid November 2008.

1. Discuss your view of the current new coal plant marketplace. What are the supply constraints, what are the key issues as you see them, what are the biggest risks you see for owners embarking on building a large-scale coal plant?

Please refer to the U.S. Coal Market Update section of the presentation.

In general, the U.S. coal plant marketplace remains very active in terms of the discussion of new projects and development activity. However, the ability to advance a project past the conceptual stage remains problematic.

While Black & Veatch is seeing a general industry trend in the U.S. toward longer lead times on (some) commodities and engineered equipment, our on-going procurement experiences indicates that multiple competitive bids can still be achieved for most equipment. The major supply constraints for a project such as Iatan 2 would center around two issues.

- **First is the AQC equipment. These OEMs are extremely busy at the current time, bundling both Iatan 1 and 2 together will help focus them on this project.**
- **The Second constraint could be finding qualified EPC contractors for either a total plant or the BOP EPC bid if KCP&L chooses this approach. For a union project this size, only a few qualified bidders will have the ware-with-all and the ability to bid. Owners have recently offered to reimburse proposal costs (with a limit) of the unsuccessful EPC bid in order to ensure competition.**

The biggest risks for an Owner embarking on a project such as Iatan 2 include:

- **Delays and cost increase due to permitting unknowns and public resistance.**
- **Market forces such as:**
  - **Escalation**
  - **Material availability and lead times**

- **Labor availability**
- **Limited qualified Engineers, EPC Contractors, and OEM's**

2. Since KCP&L is looking to maximize the size of the unit, what are the practical limits to size of the unit? Provide the basis for your answer.

From a historical manufacturing standpoint, there have been a number of PC units built over the 1,000 MW size. Our investigations of current supercritical technology, as outlined in our "Black & Veatch Advanced Supercritical Pulverized Coal Reference Plant", evaluated designs that would stay within the limits of commercially demonstrated technology. Based on this concept, we selected 525 MW, 850 MW, and 1,000 MW net plant sizes.

3. What do you see would be the steps that an owner should consider taking to mitigate the risks as they currently exist in the marketplace and why?

Please refer to the U.S. Coal Market Update section of the presentation.

To mitigate these risks Black & Veatch would recommend:

- **Selection of an Engineering and Construction Management firm that has recent and relevant detailed design, procurement, and construction from both an EpCM and EPC perspective.**
- **Development of a contracting / procurement plan that balances cost vs. schedule**

4. Discuss your company's recent experiences on large coal fuel units, including: the contracting methodology utilized, the role you played in each of those units, how successful you would characterize each of those projects and the merits. Please provide contact names at each of those projects as reference.

Please refer to the Experience segment of the Black & Veatch Value Added for Iatan 2 section of the presentation.

The following is a summary of Black & Veatch's current experience.

Currently Black & Veatch has twelve significant coal project assignments. Eight of these are Ep or EpCM scopes and three are under construction. In addition, four of the twelve are fully released EP or EPC scopes with two under construction.

There are currently ten coal projects under full construction in the U.S. and Black & Veatch is providing Ep, EpCM or EPC services on four of these ten projects.

Black & Veatch currently has four U.S. coal plants under detail design. Three of these units are being executed under an EPC contract:

- **OPPD – Nebraska City 2; 660 MW PC**
- **CPS Energy – Spruce Unit 2; 750 MW PC**
- **CWLP – Dallman 34; 200 MW PC**

The fourth is being executed in a traditional multiple contracts approach.

- **WPS – Weston Unit 4; 530 MW Supercritical PC**

In all four projects, Black & Veatch is responsible for the complete detailed design and procurement of the project.

5. Based on your answers to the above questions, what contracting path would you recommend KCP&L pursue for the Iatan 2 and Iatan 1 AQC projects and why?

Please refer to Our Approach section of the presentation.

Black & Veatch's recommendation is that the Iatan 2 and 1 AQC projects should be handled as part of the overall execution for the Iatan 2 Project. This would ensure that the equipment is the same, and that the number of contractors is minimized. By handling the projects together, and including the Iatan 1 AQC project as part of the larger overall Iatan 2 effort, cost savings in the purchase of multiple units and reduction of mobilization and de-mobilization costs are possible. Also by allowing a single entity to plan and schedule the work better coordination can be achieved.

6. Should these two projects be treated as a single, joint Project with two phases or as two independent projects, and why? How should Iatan 1 AQC Upgrades be coordinated with Iatan No. 2 Schedule regarding Design and Construction-Contract, Procurement, Erection, Schedule and Start-Up?

Please refer to Our Approach section of the presentation and write up to question 5.

7. Can your firm meet the schedule that KCP&L must achieve? Identify your plan for meeting the schedule, and all factors that are involved in this effort. Part of your response should be a conceptual schedule that your firm can meet and which you believe the market can support for fabrication, delivery, construction and start-up.

   - Provide a detailed milestone design schedule for 2006

Please refer to Our Approach section of the presentation.

We believe there is a possibility that a June 2010 can be achieved. Critical to achieving this date will be the release of a qualified and experienced Engineer who has the relevant and recent detailed design, procurement, and construction experience to start work right away. Black & Veatch has this recent and relevant experience, and is able to support an immediate start.

Included in the Weston 4 / Supercritical Reference Plant book is the actual initial 12 to 15 month schedule from our Weston 4 project. The activities listed here are identical to the ones that would be necessary to complete on latan 2 if a multiple contracting method is followed. Based upon this actual proven schedule Black & Veatch can quickly put a plan into place for latan 2.

8. Assuming the Project was a Multi-Prime, what major contracts would you recommend, and the scopes of such contracts, that you recommend KCP&L executing to provide the greatest probability of success. (ie number of independent contracts, how many material, how many erection, what should be bundled, etc) Be prepared to support your rationale.

Please refer to Our Approach section of the presentation

Due to the aggressive schedule we would recommend that for a multi-prime approach that the bundling of contracts be minimized if KCP&L has the staff and procedures to support a large number of procurements for this project. Opportunities for F&E contracts should be taken when it makes sense to do so, examples could be the boiler, cooling tower, field erected tanks, chimney, and etc.

The nature of bundling multiple contracts together means that significant design work must be completed before each package is released for bid in order to obtain the most advantageous pricing. Black & Veatch feels the best chance to meet the June 2010 date is by releasing procurements as early as possible. This will return the specific design information earlier and allow the overall design to proceed. Delaying the process until sufficient design is complete for a larger package risks delaying overall schedule.

Another consideration for more vs. fewer packages is for a complex project such as latan 2 the best course of action is to have each entity do what they do best. Stretching contractors or equipment suppliers into areas where they are not comfortable or have little experience risks potential problems later should they fail in that role.

9. What steps does your company typically do to identify and mitigate design interferences and constructability issues? How do you see that process being best applied to KCP&L's latan project(s)? How would you intend to work with KCP&L's Project Team in review and resolution of design issues in the field?

Please refer to the Tools segment of the Black & Veatch Value Added for latan 2 section of the presentation.

Black & Veatch's philosophy is that Construction / Start-up drives Engineering not the other way around. Our focus is on providing a construction friendly design, and our engineering teams rely not only on their own experiences, but also on the knowledge and experience of our own in-house construction staff and our construction partners.

For interferences mitigation Black & Veatch uses our 3-D design module of *POWRTRAK*®. All plant equipment, steel, routed pipe (including underground pipe and duct bank), cable tray, walls, flooring, and etc are modeled on-line in the system. The program checks for interferences and notifies the User. All physical drawings such as equipment arrangement, piping isometrics, cable tray layout, and etc. are pulled directly from the model database.

Constructability is handled by regular constructability review meetings conducted from the on-set of the project. In these meetings our in-house construction experts and/or experts from our construction partners (in the case of large EPC contracts) reviews the current state of design and offers opinions on what needs to be done to ease the construction. Construction is also given a chance to review all specifications that are issued for equipment and material.

10. Identify your firm's typical role and involvement in a large Multi-Prime construction Project in which you are the coordinating engineer on behalf of the owner. Provide examples of prior projects in which this was your firm's role. Provide both positive experiences and lessons learned from these prior projects.

    Please refer to the Experience and Working with Our Clients Segments of the Black & Veatch Value Added for Iatan 2 section of the presentation.

11. Identify your firm's typical role and involvement in a large EPC construction Project in which you are the coordinating engineer on behalf of the owner. Provide examples of prior projects in which this was your firm's role. Provide both positive experiences and lessons learned from these prior projects.

    Please refer to the Experience and Working with Our Clients Segments of the Black & Veatch Value Added for Iatan 2 section of the presentation.

12. In light of your view of what KCP&L's course of action should be, provide insight into what your company's preferred role or roles in the project or projects would be?

    Please refer to the Our Approach section of the presentation.

    Black & Veatch is extremely interested in the role of Engineer and Construction Manager for KCP&L. We believe that our best value added to any Owner is bringing our design and project management knowledge and expertise to the detailed design phase of a project. We are the best qualified firm to provide these services immediately to KCP&L. Our

selection for this role will also provide KCP&L with the possibility of a seamless transition to an EPC scope through our coal plant partnering agreement with Kiewit Industrial Company. We believe Black & Veatch is the only firm that can provide this option in the time frame proposed.

13. Alignment of goals between the owner, the engineer and the contractor(s) is important to creating a healthy environment for a project. Please describe your preferred method(s) for assuring the alignment of these objectives. Include as much detail as practical to convey how your concept would work and what the "checks & balances" are to keep the alignment throughout the project.

Please refer to the Working with Our Clients segment of the Black & Veatch Value Added section of the presentation.

For every large and important project Black & Veatch recommends that teaming sessions be conducted during the course of the project. These sessions would include the Owner, Black & Veatch, and the major contractors. The goal of the sessions is to develop a common mission statement for the project, build an understanding of the goals for each entity, promote open communications, build relationships and trust between the team members, and discuss potential issues. Black & Veatch has in-house professionals that facilitate such sessions, but has also used outside third parties.

14. Define what a successful project is: be specific.

Please refer to the Factors for Success section of the presentation.

We believe the following are criteria for a successful project:

- **Meets Safety Goals**
- **Meet Owner's Expectations for Quality**
- **Delivered On-Time**
- **Delivered On-Budget**
- **Strengthened Relationship Among the Team Members**
- **Minimized the Environmental Impacts**
- **Brings Value to the Owner's Shareholders and/or Ratepayers**

15. What are the critical factors that, in your experience, lead to a successful project and why? What are the factors that typically lead to a troubled project?

Please refer to the Factors for Success section of the presentation.

Black & Veatch feels the factors that are critical for the success of a project are:

- **Realistic Expectations by all parties. Unrealistic expectations often lead to short cuts or confrontations which can quickly jeopardize a project.**
- **Open Communication by all parities. Open communication is needed to ensure that timely decisions are made, that issues are**

recognized and mitigated, and that all parties are moving forward to a common goal.

- **Understanding of Goals and Visions. All parities need to understand the goals and visions of the others. Each party has a specific set of wants and needs for any given project. Understand these important components lead to better communication and realistic expectations.**
- **Selection of qualified and experienced partners. For a project as critical as the Iatan 2 project it is essential that a qualified and recently experienced team is selected. Critical to completion by June 2010 is how quickly the design team will come up to speed, and how recent is their detailed design knowledge. An aggressive schedule such as this demands a team who is fresh from a similar experience and carries with them the knowledge and lessons learned ready to apply to Iatan 2. It does not allow for an inexperienced team, a team with mostly conceptual design experience, or a team with little recent and relevant detailed design experience the luxury of coming up to speed, learning what others have already learned, and completing the project by the requested date.**

It is our belief that if any of these factors is missing, then the Iatan 2 project is at risk of being unsuccessful relative to meeting the proposed schedule.

16. What methods do you use (or do you recommend using) to status progress on projects of this magnitude, for both schedule and cost.

Please refer to the Working with Our Clients segment of the Black & Veatch Value Added section of the presentation.

For example our Weston Project Team (executed in a traditional multi-package approach) provides the Owner with a monthly progress report that contains sections for Executive Level Summary including critical path analysis, summary schedule, cost reports, and progress curves; Schedule Report including milestone status/percent complete, updated schedule, mitigation plan for any issues (if necessary), and a 90-day look ahead; Engineering Report including drawing/deliverable status and design progress; Procurement Report; Construction Report including progress reports, QA reports, safety reports, change management reports, manpower reports, and photographs.

Beyond the monthly report, the Black & Veatch design tools also gives the Owner the ability to view the 3-D model of the plant in real time to see the progress of design. Through the model, the Owner can view information regarding the plant equipment, and by using the "drill down" functions view all shop and design drawings associated with that piece of equipment.

17. Provide resumes and profiles for individuals that would be assigned to the Iatan 2 project including Project Manager, Lead Mechanical Engineer, Lead Electrical Engineer, Lead Structural, Lead I&C, Construction Management Lead (if appropriate), Project Controls Lead (if appropriate). If you feel that other positions are key to KCP&L evaluating your company's approach and team strength please supply these as well.

Please refer to the Our Team section of the Presentation and Black & Veatch Resumes for Iatan 2 section in the presentation books.

For Iatan 2, the Project Team Black & Veatch proposed is comprised of many of the key team leads from the Weston 4 Project (530 MW supercritical PC). This management team and discipline leads bring with them the recent experience of having completed a detail design for a modern supercritical unit utilizing a Toshiba turbine, B&W boiler, and B&W AQC equipment. Their experiences and lessons learned from having just "been there - done that" provides KCP&L with the most qualified team to give the project the best chance to meet the June 2010 date.

18. Propose the methodology for a contract between KCP&L and your company that gives the parties the best chance of success. Include how your proposed contracting method would result in timely engineering to support, procurement, construction, start-up and commissioning of a 900 MW supercritical pulverized coal unit in June of 2010, with this unit providing excellent availability and performance and is efficient to operate and maintain.

Please refer to Our Approach section of the presentation.

Black & Veatch believes in order to have the best chance to reach the June 2010 milestone KCP&L must release the engineer to complete any remaining conceptual design, and to start detail design, and procurements immediately. After this start, KCP&L could follow two different execution plans.

- **The first approach would be to continue under a multi-contract contract scenario with Black & Veatch completing the detail design, providing procurement services for equipment and contractors, and providing construction management and startup services. In order for this to be successful KCP&L must be able to support engineering and procurement efforts with timely decisions and processes.**
- **The second approach would be after the release of the engineering and procurement work to start discussions with Kiewit / Black & Veatch (KBV) to negotiate an EPC contract for the completion of Iatan 2.**

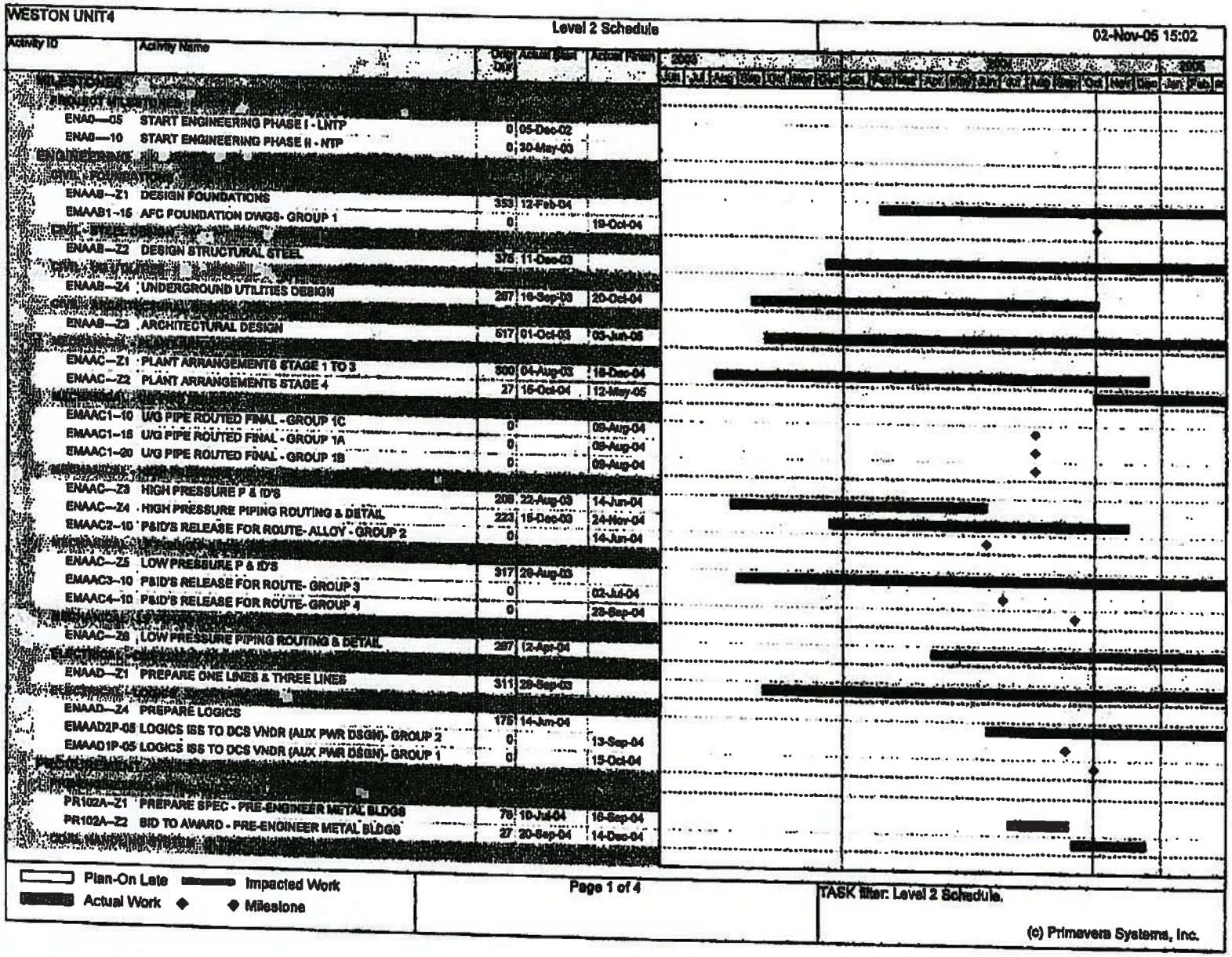
In either methodology the first critical step is to immediately begin the detailed engineering.

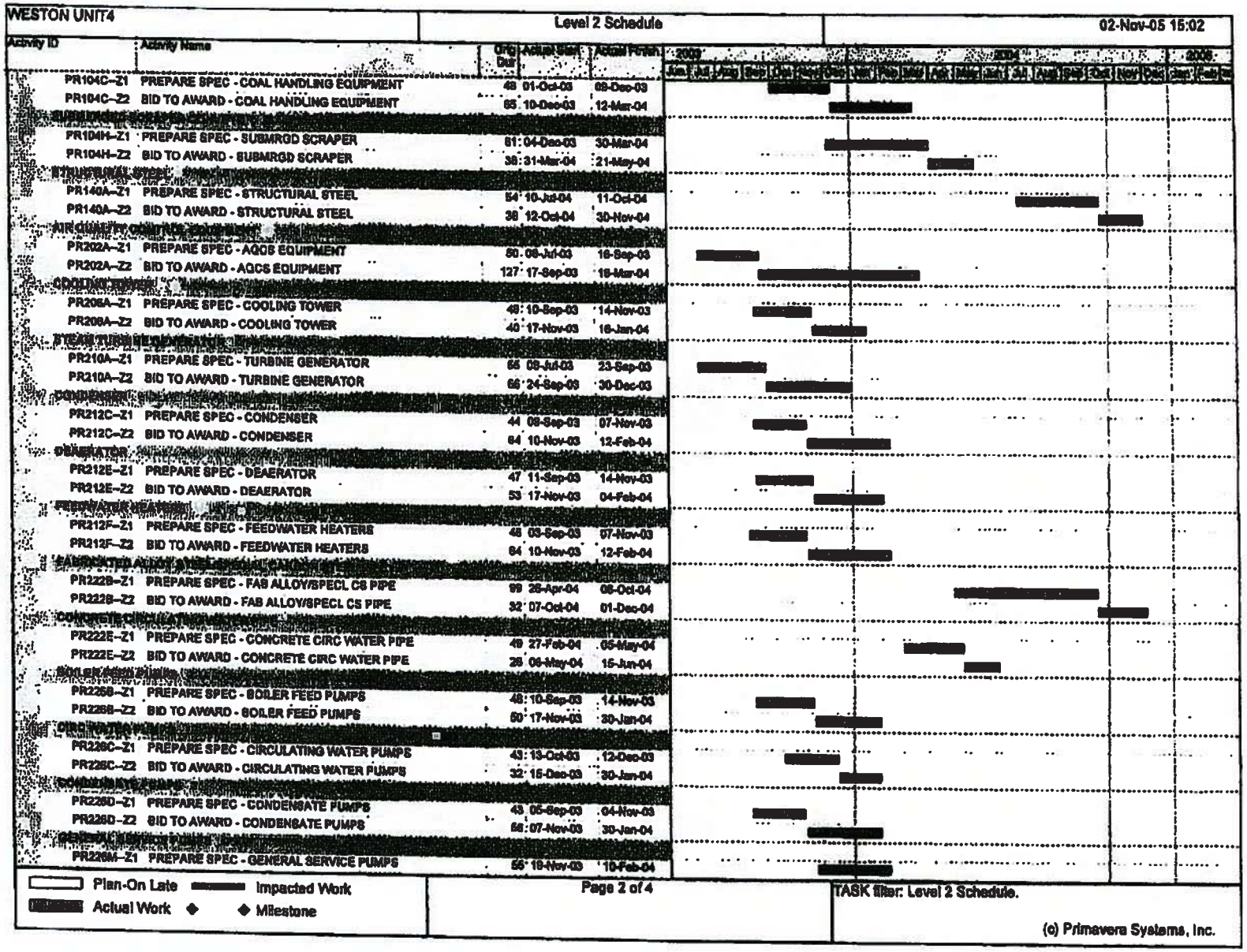
The time available to decide between the two approaches is limited to a month or two, but Black & Veatch is in the unique position of being able to make this option available with such an aggressive schedule.

WESTON UNIT 4

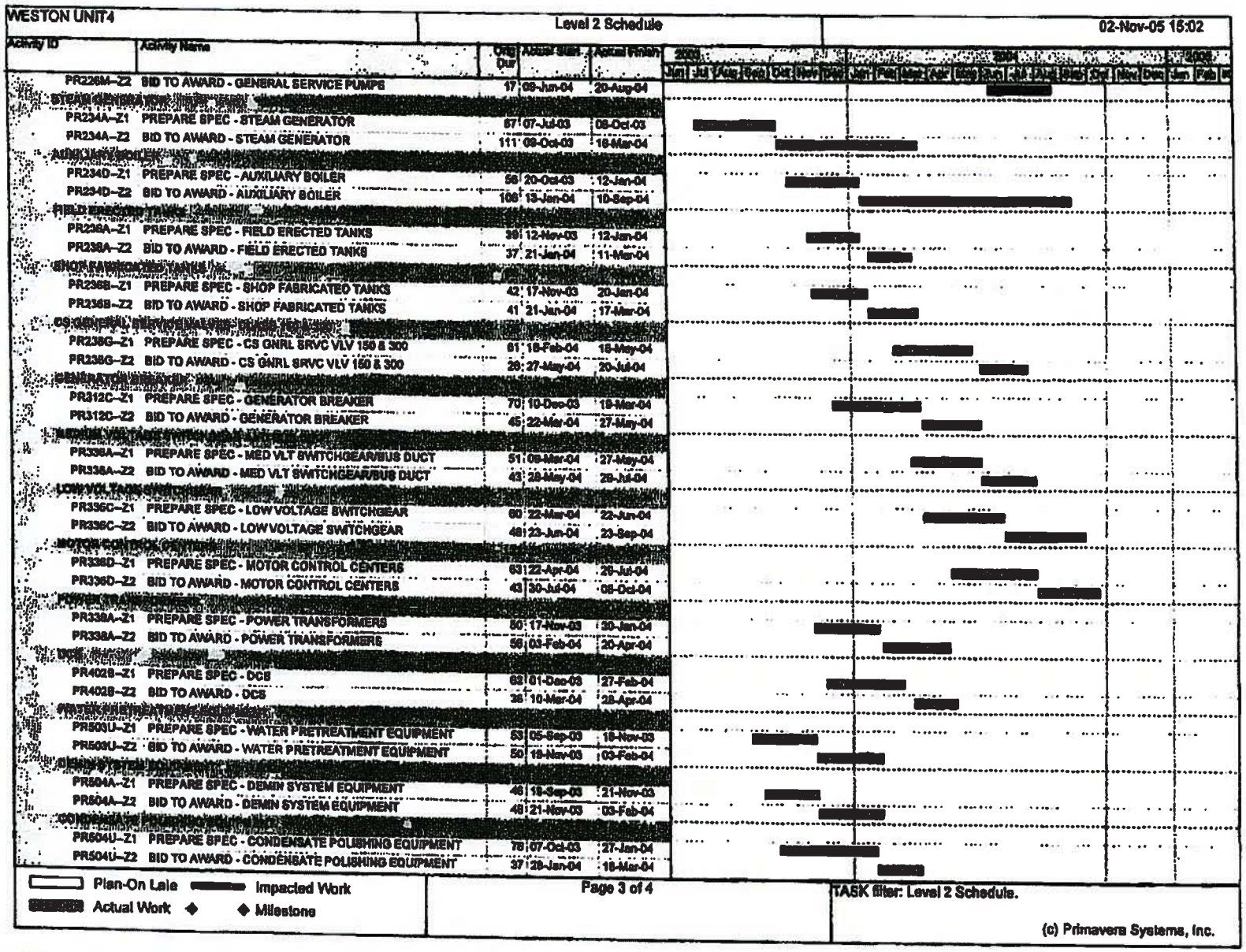
DETAILED LEVEL 2 SCHEDULE

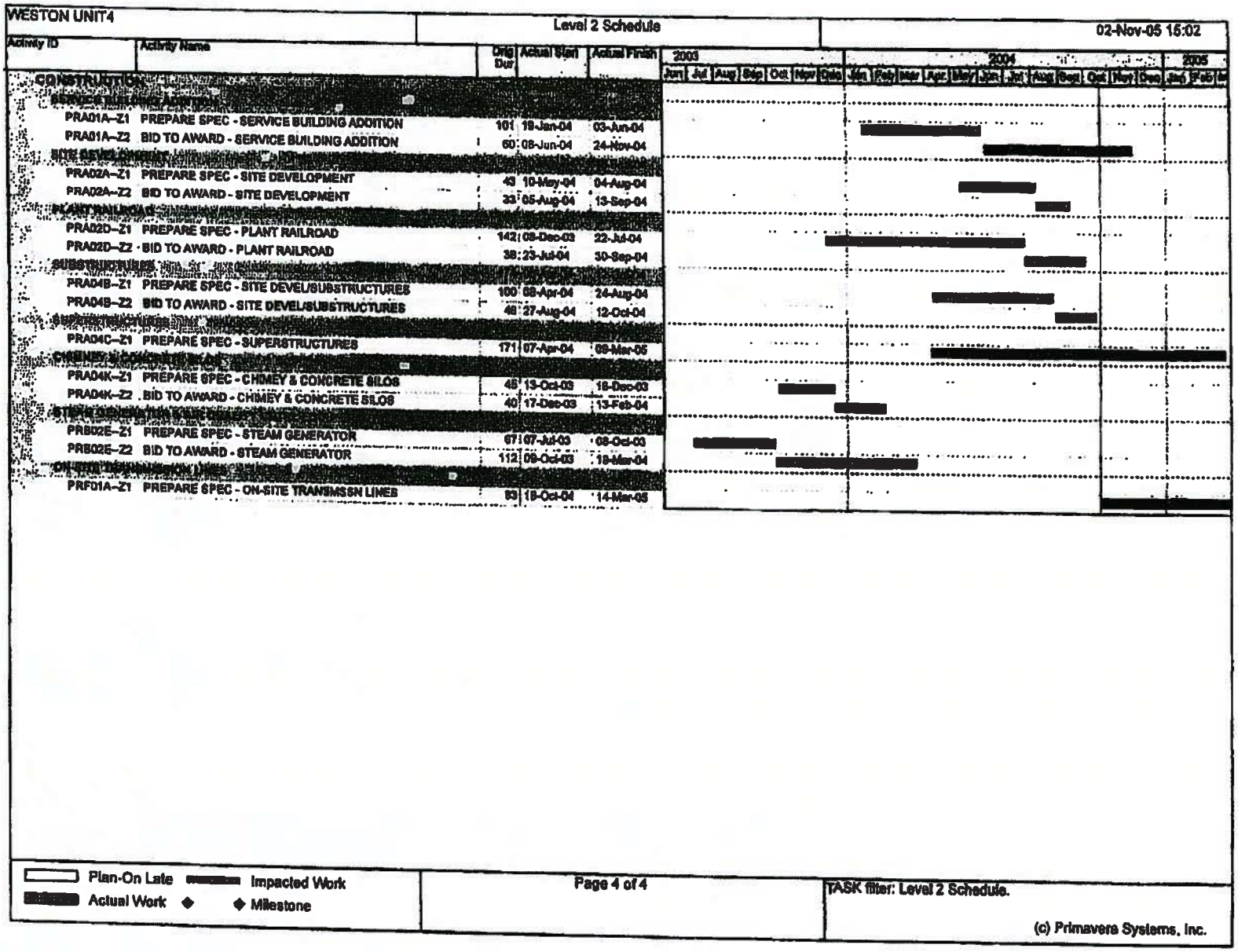
PROJECT ACTIVITIES STARTED
MONTHS 1 THROUGH 15


WESTON UNIT4
Level 2 Schedule
02-Nov-05 15:02
Activity ID
Activity Name
ENA0---05 START ENGINEERING PHASE I - LNTP
ENA0---10 START ENGINEERING PHASE II - NTP
ENAAB---Z1 DESIGN FOUNDATIONS
EMAAB1-15 AFC FOUNDATION DWGS- GROUP 1
ENAAB---Z2 DESIGN STRUCTURAL STEEL
ENAAB---Z4 UNDERGROUND UTILITIES DESIGN
ENAAB---Z3 ARCHITECTURAL DESIGN
ENAAC---Z1 PLANT ARRANGEMENTS STAGE 1 TO 3
ENAAC---Z2 PLANT ARRANGEMENTS STAGE 4
EMAAC1-10 U/G PIPE ROUTED FINAL - GROUP 1C
EMAAC1-15 U/G PIPE ROUTED FINAL - GROUP 1A
EMAAC1-20 U/G PIPE ROUTED FINAL - GROUP 1B
ENAAC---Z3 HIGH PRESSURE P & ID'S
ENAAC---Z4 HIGH PRESSURE PIPING ROUTING & DETAIL
EMAAC2-10 P&ID'S RELEASE FOR ROUTE- ALLOY - GROUP 2
ENAAC---Z5 LOW PRESSURE P & ID'S
EMAAC3-10 P&ID'S RELEASE FOR ROUTE- GROUP 3
EMAAC4-10 P&ID'S RELEASE FOR ROUTE- GROUP 4
ENAAC---Z6 LOW PRESSURE PIPING ROUTING & DETAIL
ENAAD---Z1 PREPARE ONE LINES & THREE LINES
ENAAD---Z4 PREPARE LOGICS
EMAAD2P-05 LOGICS ISS TO DCS VNDR (AUX PWR DSGN)- GROUP 2
EMAAD1P-05 LOGICS ISS TO DCS VNDR (AUX PWR DSGN)- GROUP 1
PR102A-Z1 PREPARE SPEC - PRE-ENGINEER METAL BLDGS
PR102A-Z2 BID TO AWARD - PRE-ENGINEER METAL BLDGS
Plan-On Late
Impacted Work
Actual Work
Milestone
Page 1 of 4
TASK filter: Level 2 Schedule.
(c) Primavera Systems, Inc.

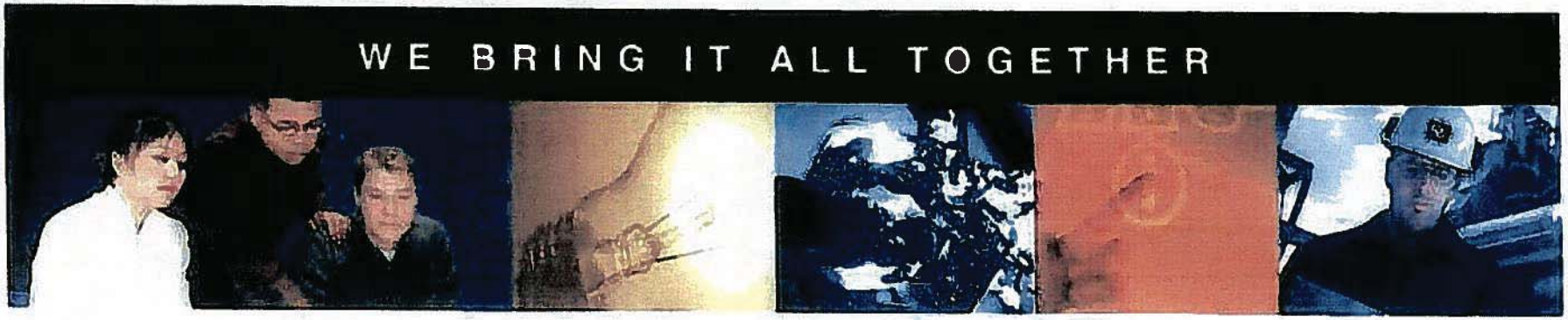


Schedule KMR2010-19


WESTON UNIT4
Level 2 Schedule
02-Nov-05 15:02
Activity ID
Activity Name
Orig Dur
Actual Start
Actual Finish
PR226M–Z2 BID TO AWARD - GENERAL SERVICE PUMPS 17 09-Jun-04 20-Aug-04
PR234A–Z1 PREPARE SPEC - STEAM GENERATOR 67 07-Jul-03 08-Oct-03
PR234A–Z2 BID TO AWARD - STEAM GENERATOR 111 09-Oct-03 18-Mar-04
PR234D–Z1 PREPARE SPEC - AUXILIARY BOILER 56 20-Oct-03 12-Jan-04
PR234D–Z2 BID TO AWARD - AUXILIARY BOILER 166 13-Jan-04 10-Sep-04
PR236A–Z1 PREPARE SPEC - FIELD ERECTED TANKS 39 12-Nov-03 12-Jan-04
PR236A–Z2 BID TO AWARD - FIELD ERECTED TANKS 37 21-Jan-04 11-Mar-04
PR236B–Z1 PREPARE SPEC - SHOP FABRICATED TANKS 42 17-Nov-03 20-Jan-04
PR236B–Z2 BID TO AWARD - SHOP FABRICATED TANKS 41 21-Jan-04 17-Mar-04
PR236G–Z1 PREPARE SPEC - CS GNRL SRVC VLV 150 & 300 61 16-Feb-04 16-May-04
PR236G–Z2 BID TO AWARD - CS GNRL SRVC VLV 150 & 300 29 27-May-04 20-Jul-04
PR312C–Z1 PREPARE SPEC - GENERATOR BREAKER 70 10-Dec-03 19-Mar-04
PR312C–Z2 BID TO AWARD - GENERATOR BREAKER 45 22-Mar-04 27-May-04
PR336A–Z1 PREPARE SPEC - MED VLT SWITCHGEAR/BUS DUCT 51 09-Mar-04 27-May-04
PR336A–Z2 BID TO AWARD - MED VLT SWITCHGEAR/BUS DUCT 43 28-May-04 29-Jul-04
PR336C–Z1 PREPARE SPEC - LOW VOLTAGE SWITCHGEAR 60 22-Mar-04 22-Jun-04
PR336C–Z2 BID TO AWARD - LOW VOLTAGE SWITCHGEAR 48 23-Jun-04 23-Sep-04
PR336D–Z1 PREPARE SPEC - MOTOR CONTROL CENTERS 63 22-Apr-04 26-Jul-04
PR336D–Z2 BID TO AWARD - MOTOR CONTROL CENTERS 43 30-Jul-04 08-Oct-04
PR338A–Z1 PREPARE SPEC - POWER TRANSFORMERS 50 17-Nov-03 30-Jan-04
PR338A–Z2 BID TO AWARD - POWER TRANSFORMERS 56 03-Feb-04 20-Apr-04
PR402B–Z1 PREPARE SPEC - DCS 63 01-Dec-03 27-Feb-04
PR402B–Z2 BID TO AWARD - DCS 28 10-Mar-04 28-Apr-04
PR503U–Z1 PREPARE SPEC - WATER PRETREATMENT EQUIPMENT 53 05-Sep-03 18-Nov-03
PR503U–Z2 BID TO AWARD - WATER PRETREATMENT EQUIPMENT 50 19-Nov-03 03-Feb-04
PR504A–Z1 PREPARE SPEC - DEMIN SYSTEM EQUIPMENT 46 18-Sep-03 21-Nov-03
PR504A–Z2 BID TO AWARD - DEMIN SYSTEM EQUIPMENT 48 21-Nov-03 03-Feb-04
PR504U–Z1 PREPARE SPEC - CONDENSATE POLISHING EQUIPMENT 78 07-Oct-03 27-Jan-04
PR504U–Z2 BID TO AWARD - CONDENSATE POLISHING EQUIPMENT 37 28-Jan-04 18-Mar-04
2003
2004
2005
Plan-On Late
Impacted Work
Actual Work
Milestone
Page 3 of 4
TASK filter: Level 2 Schedule.
(c) Primavera Systems, Inc.



Schedule KMR2010-19



Kansas City Power & Light

Delivering World Class Projects: Iatan 2 Expansion

BLACK & VEATCH
building a world of difference™

ENERGY WATER INFORMATION GOVERNMENT

November 8, 2005

0240

Schedule KMR2010-19

Agenda

- Greetings and Introductions
- **KCP&L Update**
- Black & Veatch Today
- U.S. Coal Market Update
- Black & Veatch Value Added for Iatan 2 Expansion Project
- Our Team
- Our Approach
- Factors for Success
- Wrap-Up

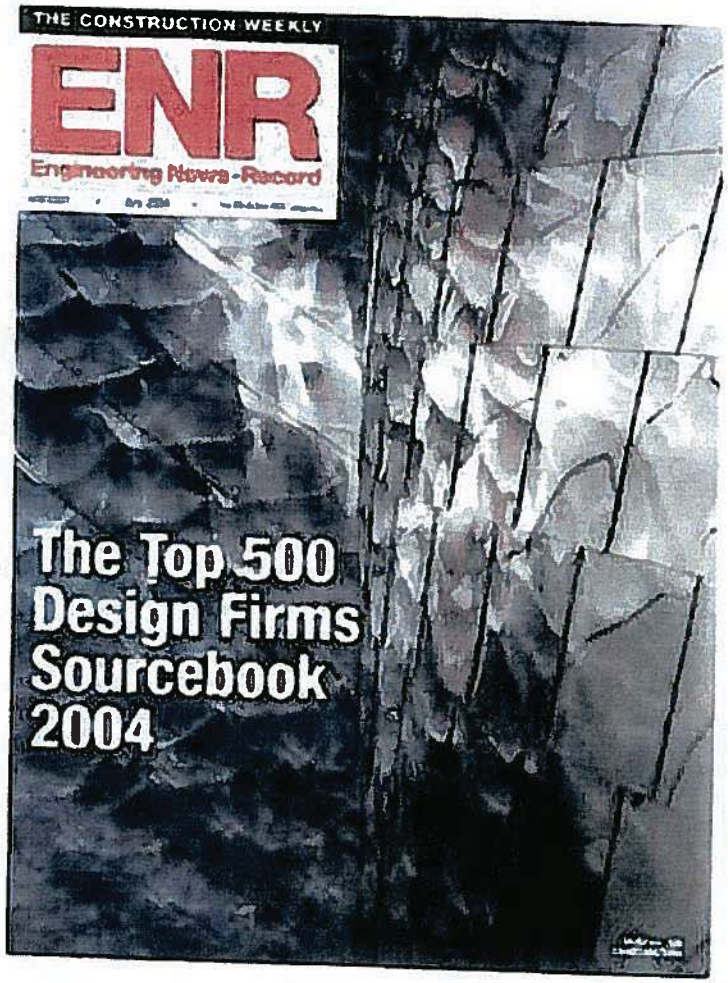
WE BRING IT ALL TOGETHER

Black & Veatch Today

Black & Veatch

- 90+ Regional and Project Offices Worldwide
- 6,800+ Employees Worldwide
- Project Experience in More Than 100 Countries on 6 Continents
- $1.4 Billion in Annual Revenues in 2004
- Ranked on *Forbes* "America's Largest Private Companies" Listing for 2004
- Reputation of Integrity and Competence
- Employee-Owned Corporation

Black & Veatch –
Building a World of Difference



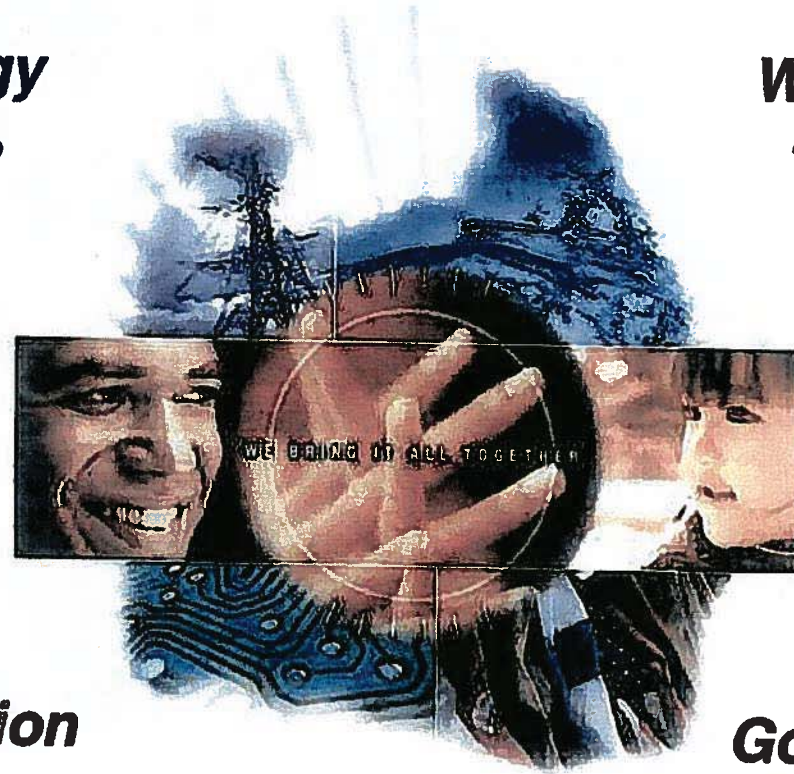
ENR 2004 *Top 500 Design Firms Sourcebook*

- 1st – Top 25 in Fossil Fuel
- 2nd – Top 25 in Power
- 2nd – Top 10 in Transmission and Distribution
- 3rd – Top 25 in Treatment and Desalination
- 4th – Top 25 in Water Supply
- 5th – Top 10 in Nuclear Plants
- 5th – Top 25 in Wastewater Treatment

Black & Veatch
2004 Earned Revenue by Markets Served

Energy
47%

Water
41%



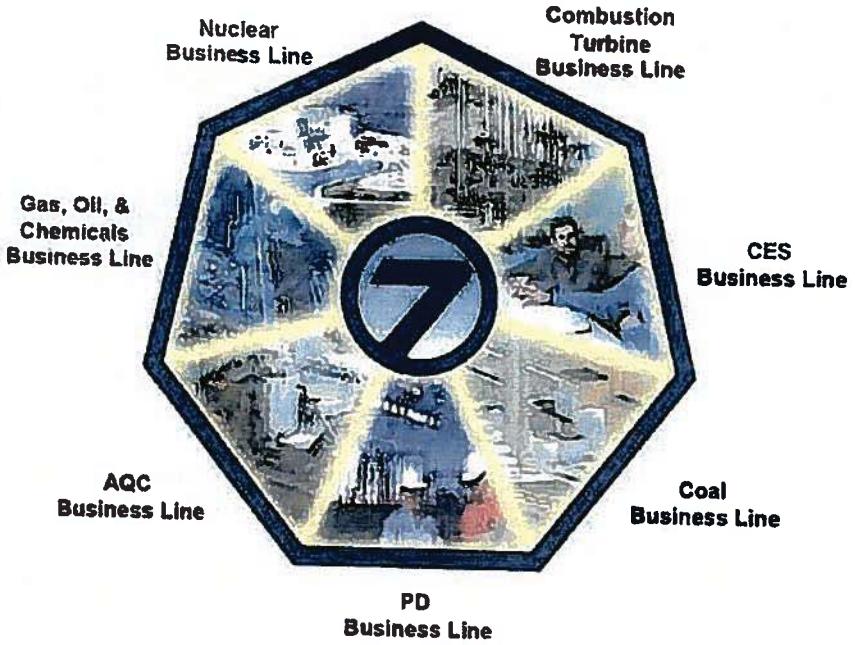
Information
6%

Government
6%

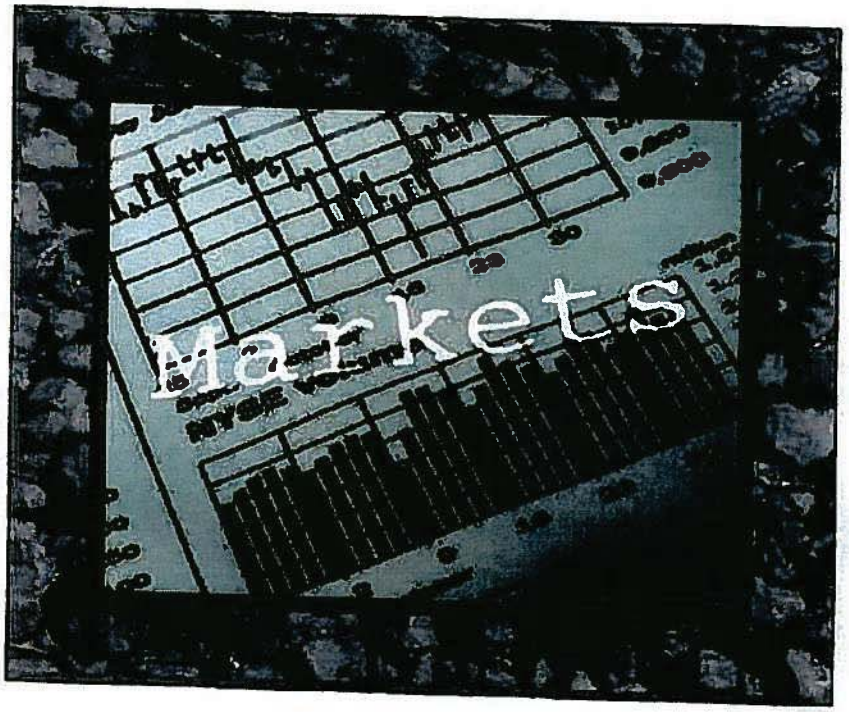
Schedule KMR2010-19
0245

Black & Veatch Energy Business Lines

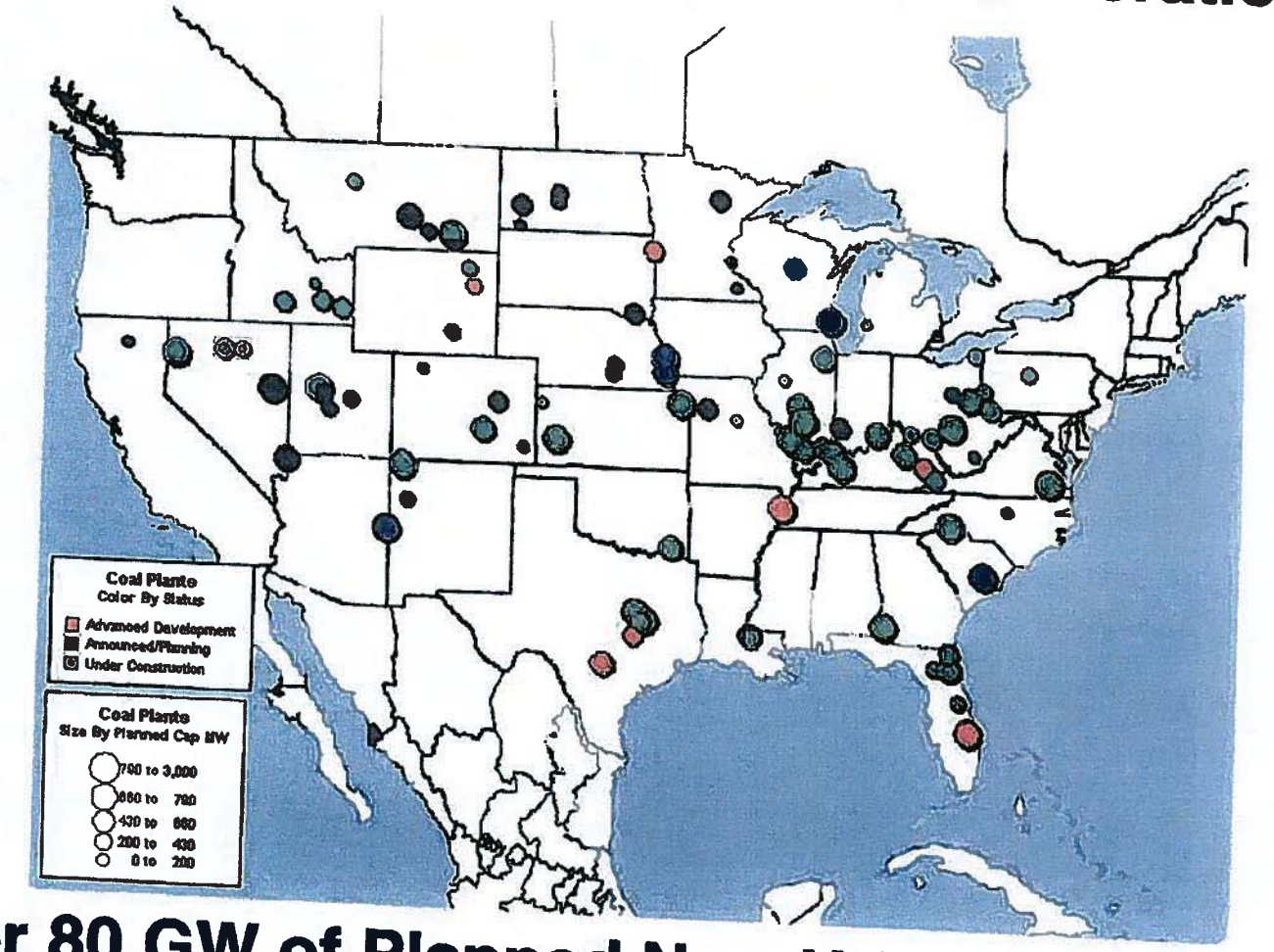
- Coal-Fired Generation
- Air Quality Control
- Power Delivery
- Nuclear Generation
- Gas, Oil and Chemicals
- Combustion Turbine Generation
- Consulting Engineering Services



U.S. Coal Market Update



U.S. Energy Market Signals Remain Favorable for New Coal-Fired Generation



Over 80 GW of Planned New U.S. Coal Projects

U.S. Coal Market Drivers and Key Challenges

Key Drivers

- Fuel Diversity – Price of Natural Gas ($12.00+ MMbtu / Henry Hub)
- Abundant Energy Source
- Non-Competing Fuel
  - Not Used for Home Heating
  - Not Used for Transportation
- New Plants Are Cleaner Burning
  - Better Emissions Controls
  - Aging Existing Fleet
- Improving Technology – Supercritical Plants Are Higher Efficiency (40% vs 36%)
- Need for Base Load Generation
- Proven Technology Is Available Now

Key Challenges

- Environmental Concerns for Coal Emissions:
  - Challenges by Environmental Groups
- Higher Initial Capital Cost ($ / kW) Than Gas Plants (2-3 Times as Much)
  - Limits the Profile of Who Builds These
  - More Difficult to Cover EPC Liabilities
- Longer Schedules for Permitting and Construction
- Market and Sourcing Pressures
- OEM Stability

Market and Sourcing

Increasing Coal Plant Costs

- Price Escalation on Commodities Such as Steel, Copper and Alloy Have Driven Prices and Lead Times Up Dramatically
- AQCS Equipment Extremely Tight Market Due to Ongoing Retrofit Work (30% Materials)
- Boiler Prices Increasing (30% Materials)

The E&C Industry Is Also "Tight" With a Limited Number of Capable Players

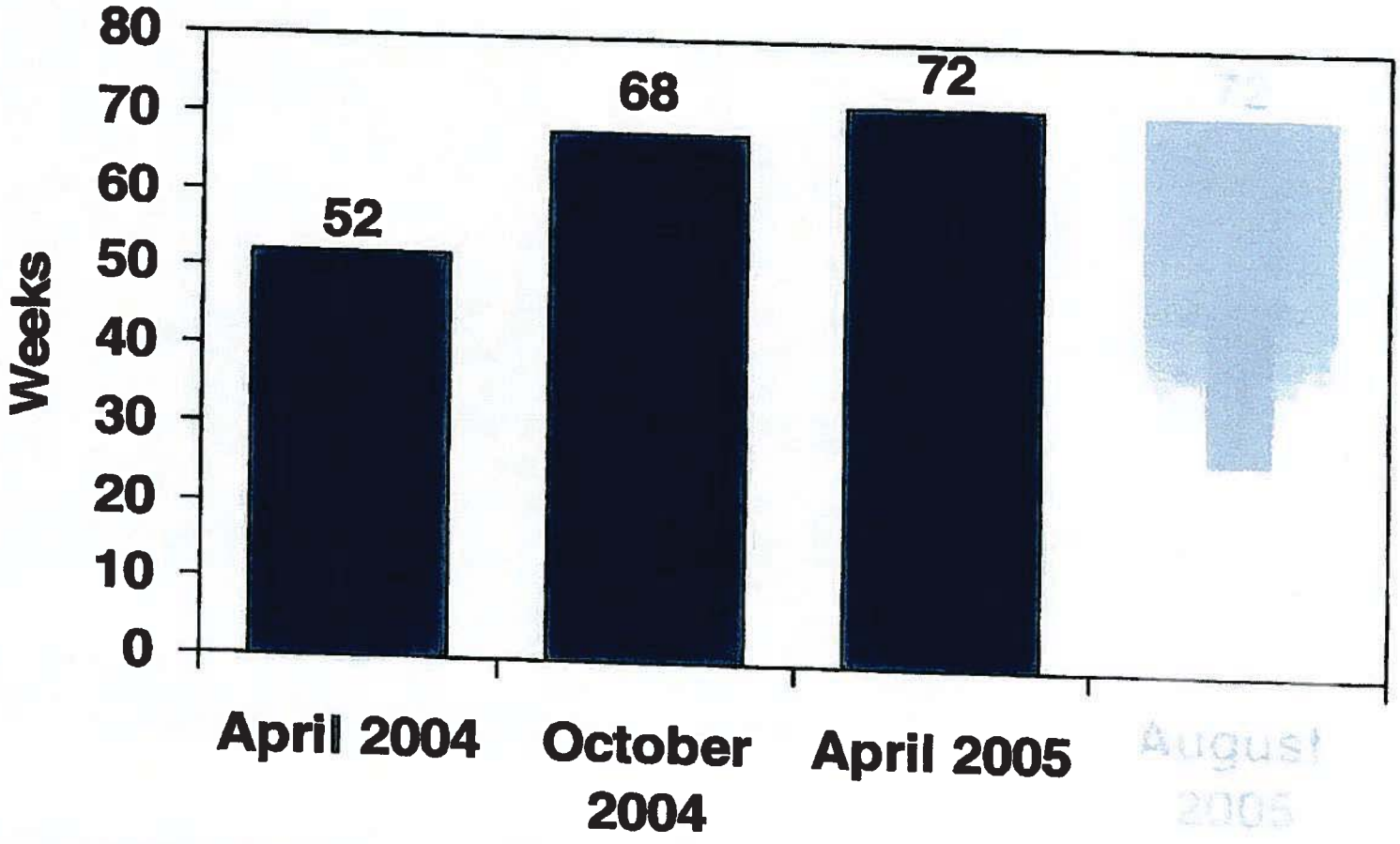
Market and Sourcing Example – Price Escalation on Commodities as of June 2005

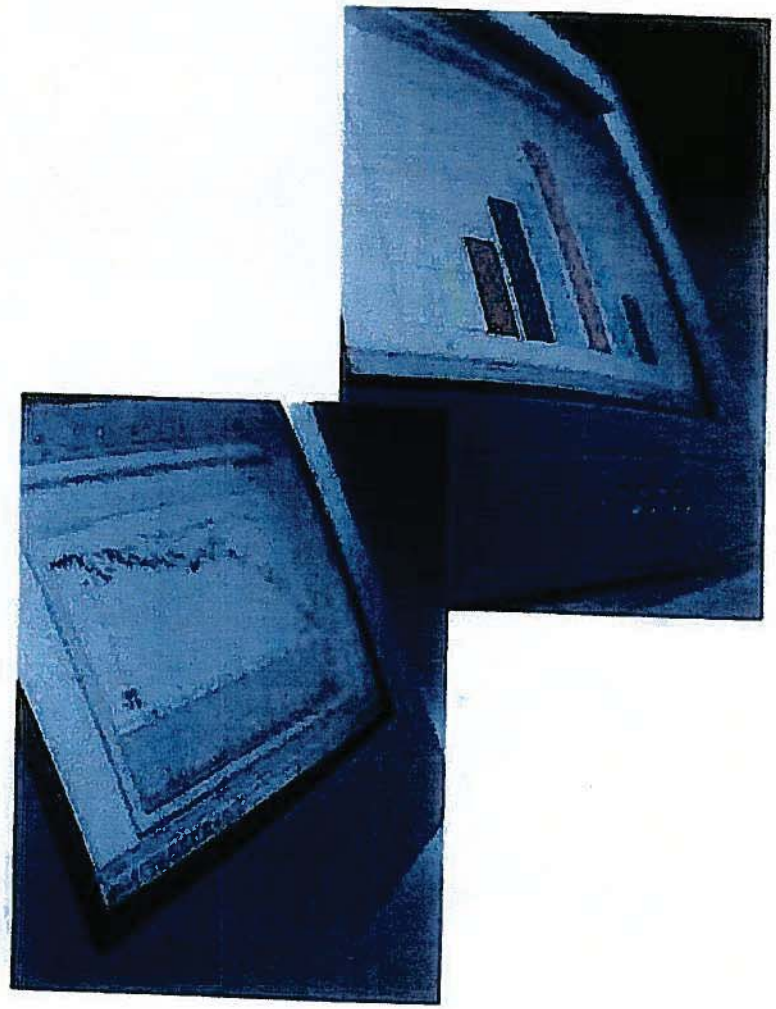
Key Commodities	Pricing Trends in Prior 12 Months	% Change
Steel	↑	+31%
Copper	↑	+20%
Stainless	↑	+70%
Piping and Tubing	↑	+64%
Consumer Price Index	↑	+3%
Labor	↑	+3-4%

Continues to escallate

Sources: NuCor Yamata Steel Co., London Metal Exchange, NYMEX, Bureau of Labor Statistics.

Market and Sourcing Example – Pipe Material Leads



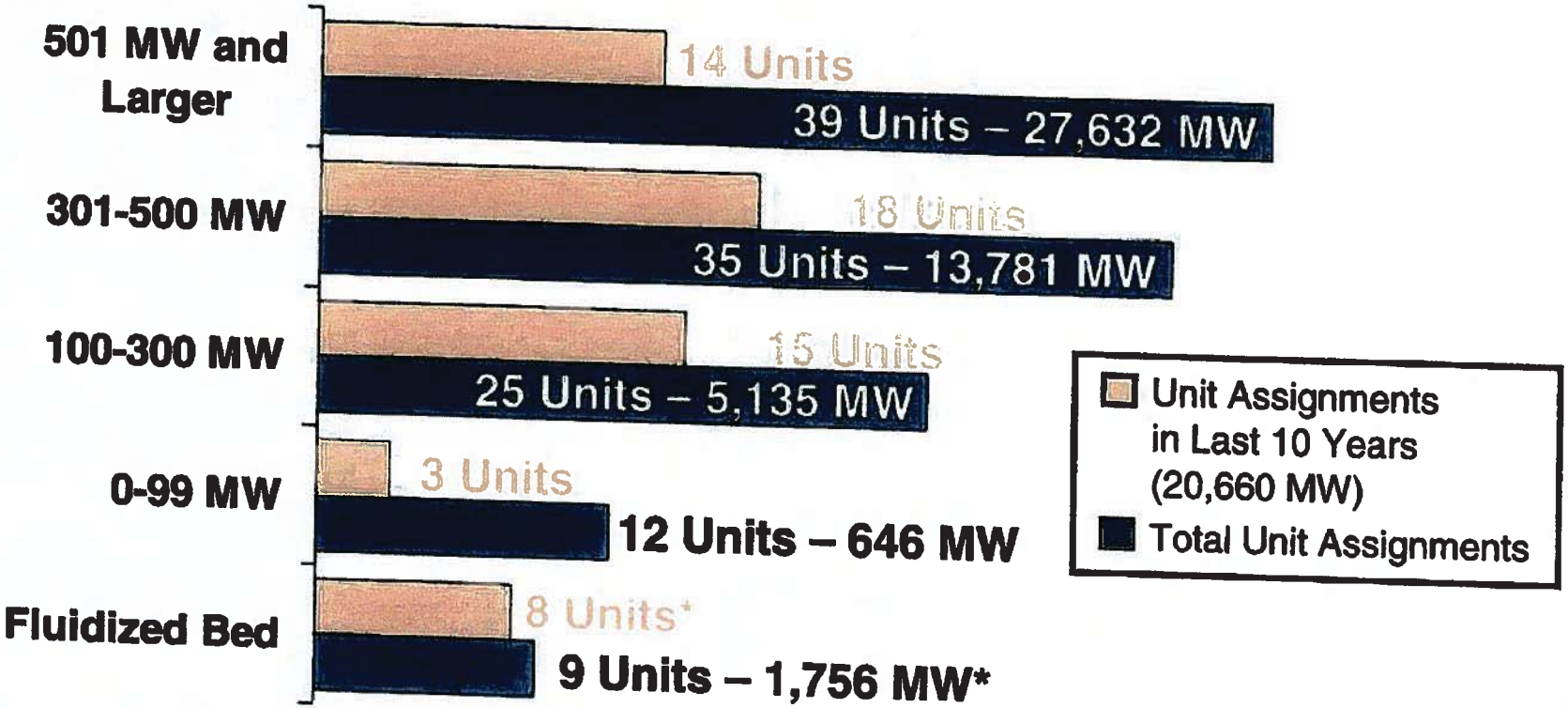


Black & Veatch Value Added for Iatan 2 Expansion Project

Black & Veatch Value Added for Iatan 2 Expansion Project

- Experience
- Schedule Certainty
- Current OEM Relationships and Procurement Expertise
- Tools
- Working With Clients
- Plant Performance

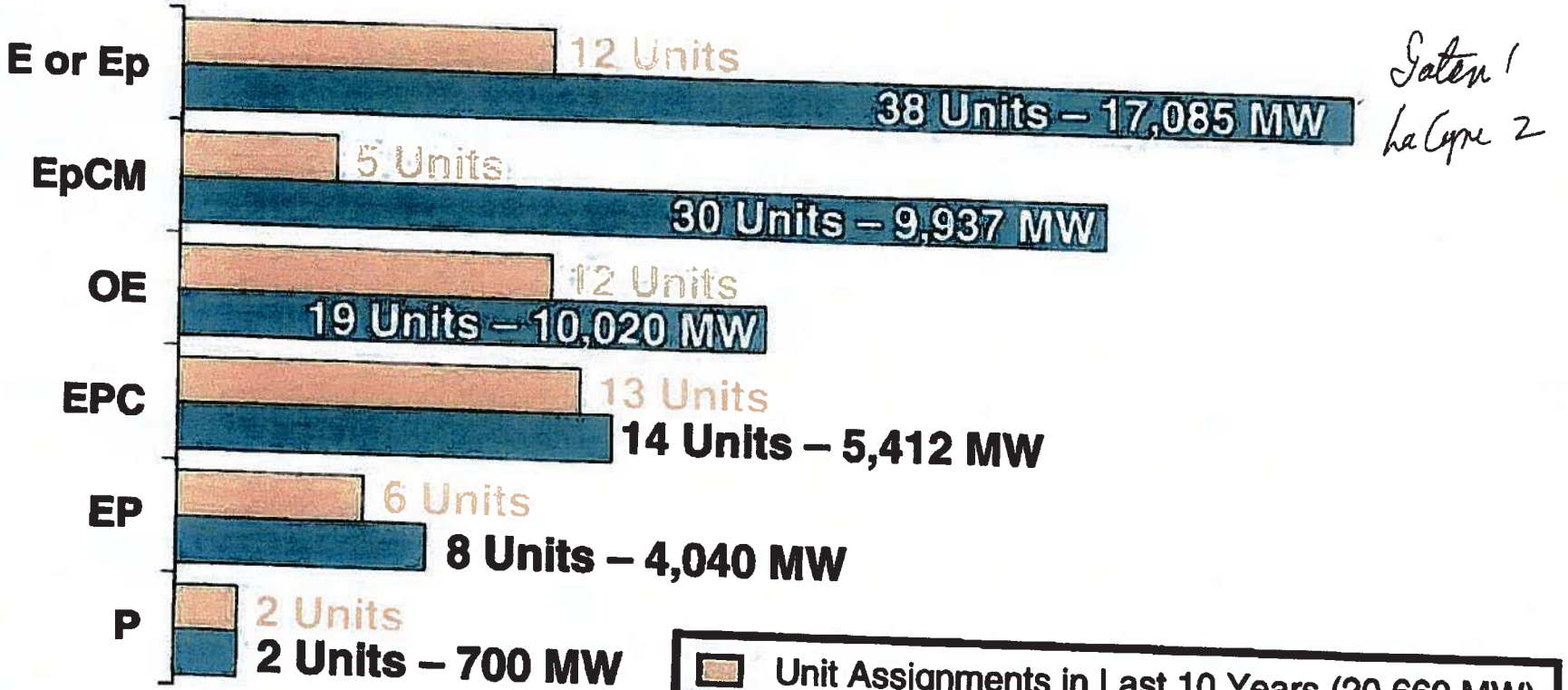
Black & Veatch Coal-Fired Generating Experience by Size



Coal-Fired Generating Unit Assignments – 111 Units Totaling 47,194 MW

* Included in Totals Listed Above

Black & Veatch Coal-Fired Generating Experience by Scope



Galen 1
La Cygne 2

Coal-Fired Generating Unit Assignments – 111 Units Totaling 47,194 MW

Black & Veatch Current Coal Projects

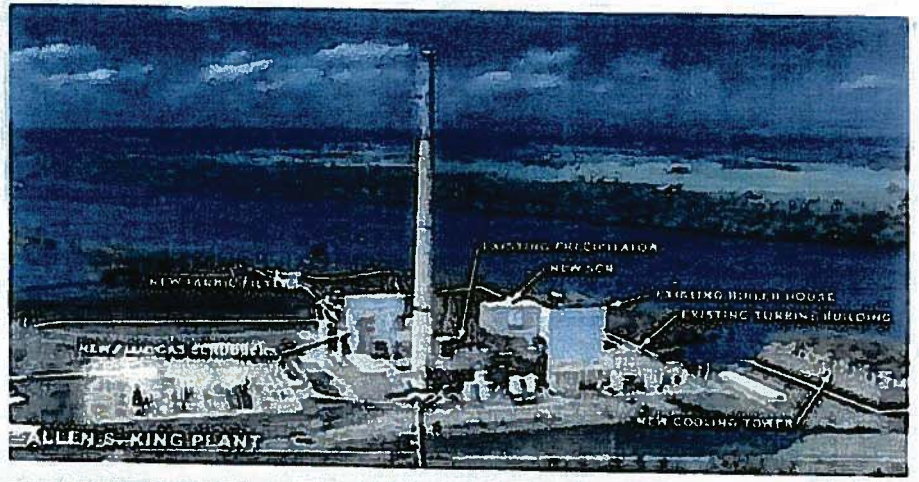
Owner	Project	Project Size	Scope	COD
Sumitomo Corporation	Tanjung Jati B Power Plant	2 x 660 MW	EP	2006
Xcel Energy	King Rehabilitation Project	600 MW	Ep	2007
BESCL	Bhilai, India	2 x 250 MW	Ep	2007
Black Hills Energy	Wyoming Coal Project	1 x 95 MW	OE	2008
WPSC	Weston Unit 4	530 MW	Ep, Field Engr., SU	2008
OPPD	Nebraska City Unit 2	660 MW	EPC	2009
CPS	J.K. Spruce Unit 2	750 MW	EPC	2010
CWLP	Dallman Unit 4	200 MW	EPC	2010
Big Stone II Ownership Group	Big Stone II	600 MW	EpCM	2011
Chugach Electric Association, Inc.	Alaska Coal Project	1 x 130 MW	Conceptual Engineering / Cost Estimate	2011
WPSC	Baseload II	530 MW	Conceptual Design / Permitting Support	2011 2013
Tri-State Generation & Transmission	Rocky Mountain Region Coal Project	700 MW	Owner's Engineer / Conceptual Design	2012

City Public Service Energy
J.K. Spruce Unit 2 Project

- Contract Signed August 15th
- B&V Role: EP
- ZCC / TIC Role: C
- EPC JV: ZCC, TIC, B&V
- 1 x 750 MW PC Subcritical Unit
- Scheduled Completion: June 2010

Xcel Energy A.S. King Plant Rehabilitation

- B&V Scope: Ep, Field Engineering, Startup
- Supercritical Steam Turbine Replacement
- DCS Upgrade
- New SCR Using Aqueous Ammonia
- New Lime Spray Dryer
- New Fabric Filter
- New Ash Handling System for FF
- Balanced Draft Conversion and ID Fans
- Lower Furnace and Cyclones Replacement
- Tubular Air Heater Refurbishment
- New Cooling Tower
- Cold Reheat Piping Replacement



Wisconsin Public Service
Weston Unit 4

- B&V Role: Ep, Site Manager, Field Engineering, Startup
- 1 x 530 MW Supercritical Unit
  - 3,582 psi, 1,050F / 1,080F
- B&W Boiler, Toshiba Turbine Generator
- B&W Spray Dryer Absorber and Fabric Filter
- Construction Start – October 2005
- Scheduled Completion: March 2008

Schedule Certainty

Black & Veatch EpCM and EPC Project Results

- 5 of 6 U.S. Coal Projects Completed Early or On Time in Last 10-Years
- 17 of 19 Combustion Turbine Projects With 2003 – 2005 COD Completed Early or On Time

Current OEM Relationships – Black & Veatch Ongoing and Recent OEM Project Experience

Owner	Project	Steam Turbine	Boiler	AQCS
Sumitomo Corporation	Tanjung Jati B Power Plant	Toshiba	B&W	B&W
Xcel Energy	King Rehabilitation Project	Alstom	B&W*	Alstom
WPSC	Weston Unit 4	Toshiba	B&W*	B&W
OPPD	Nebraska City Unit 2	Toshiba	IHI	Alstom
CPS	J.K. Spruce Unit 2	Toshiba	Alstom	Alstom
CWLP	Dallman Unit 4	Toshiba	FW	TBD

***Supercritical**

WE BRING IT ALL TOGETHER

Current Procurement Expertise Examples

- Boiler OEM Contracts
  - Current Contracts With 4 OEMs
  - Commercial Considerations
  - Technical Escrow Accounts
- HP Alloy Pipe Procurements
- Early Procurements Identification
- Global Sourcing and Inspection Resources

Black & Veatch Tools and Reference Designs

- B&V Standard Practices for System Design, Piping, Equipment, and Materials
- Supercritical Reference Plant 3 Sizes 530 850 1000
- Monte Carlo Availability and Contingency Analysis
- ***POWRTRAK®***

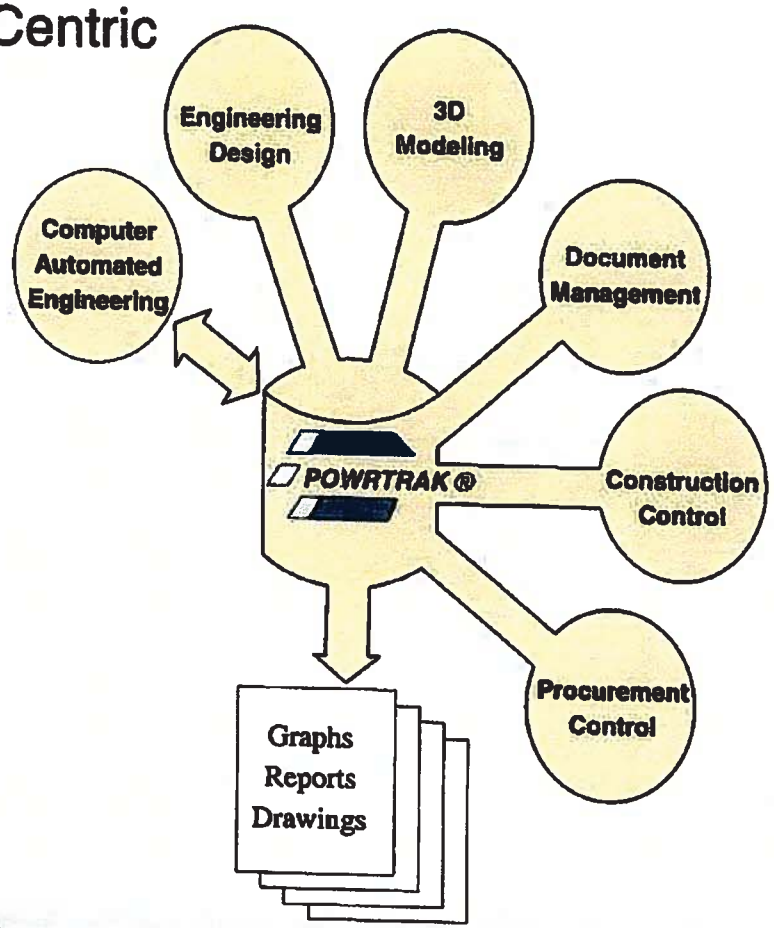
POWRTRAK®

Black & Veatch Advantage

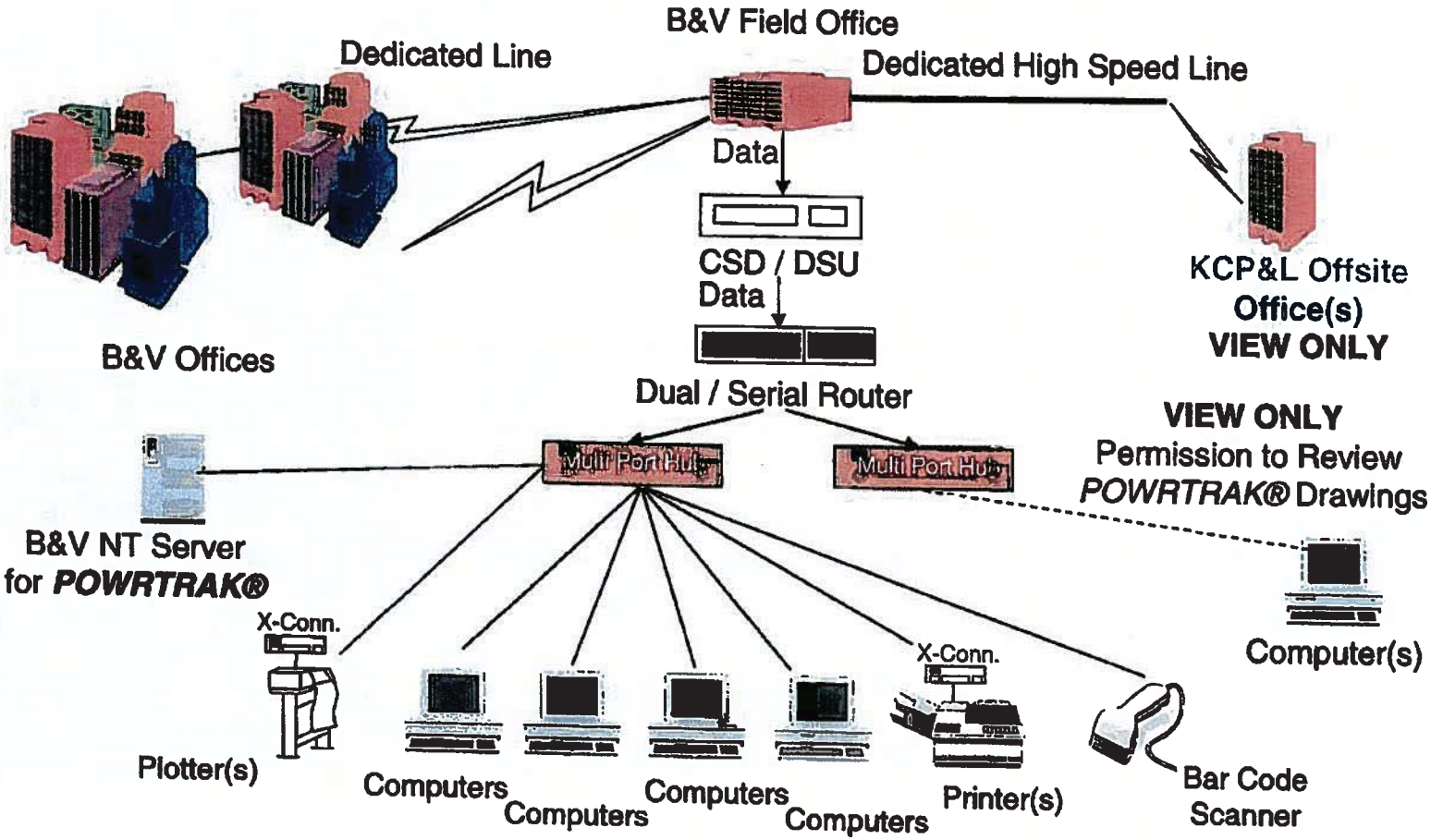
- State-of-the-Art, Integrated, Data-Centric Design and Management Tool

Benefits to KCP&L

- Facilitates Communication (Owner / Engineer)
- Enables Team Collaboration
- Shortens Engineering Schedule Durations
- Lowers Project Cost
- Improves Project Quality
- Increases Engineering Efficiency



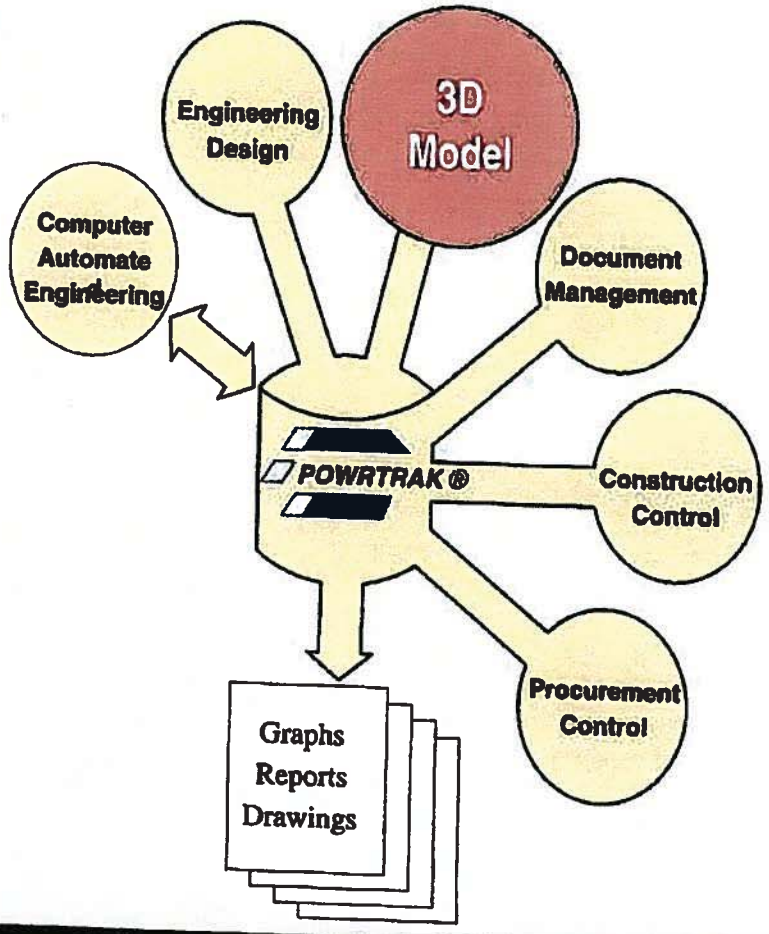
POWRTRAK® Communication Model



POWRTRAK® 3-D Modeling

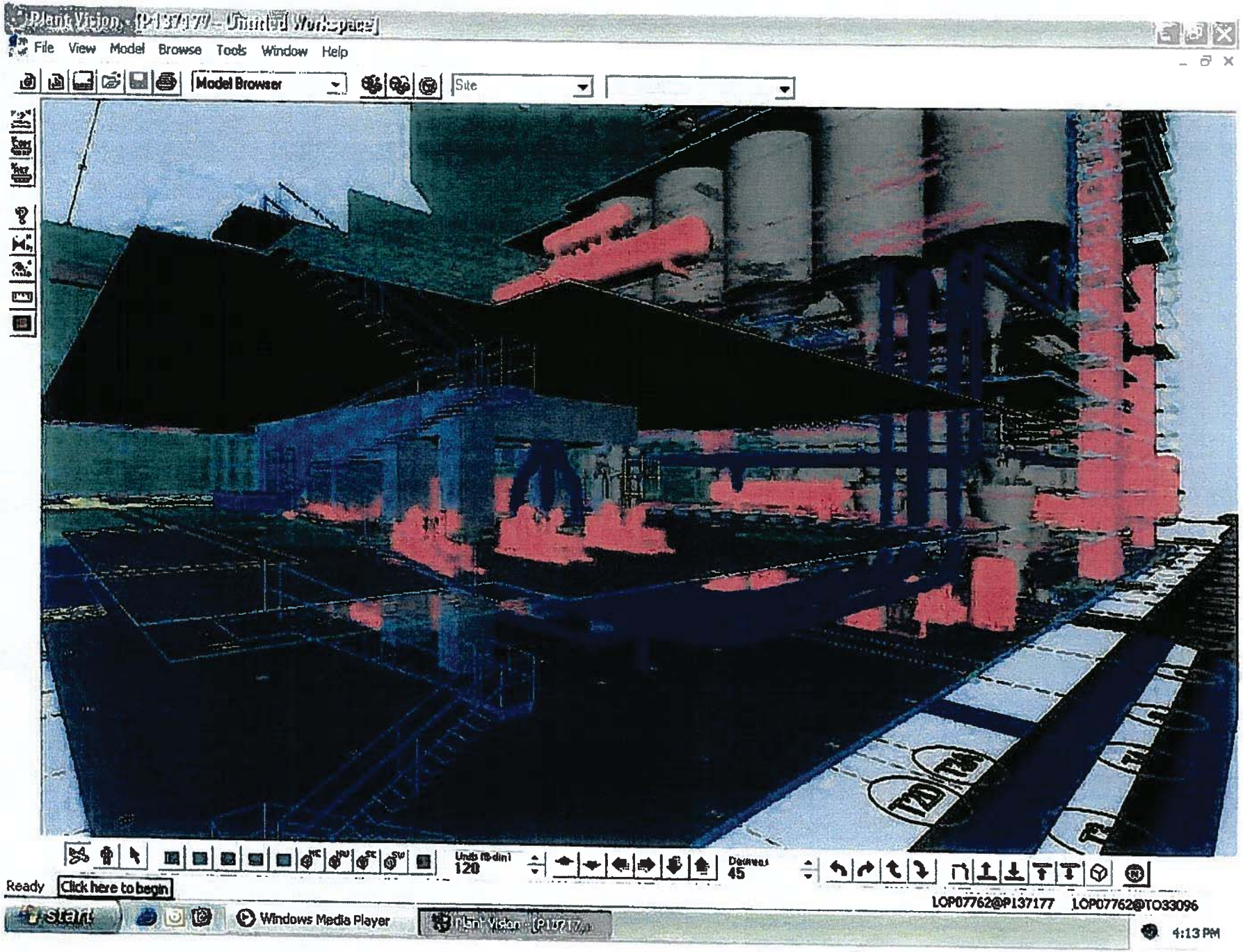
Space Control Features:

- Plant Layout
- Integration With Plant Equipment and CAE Tools
- Interference Detection
- Constructibility Reviews
- Automated Drawing Production

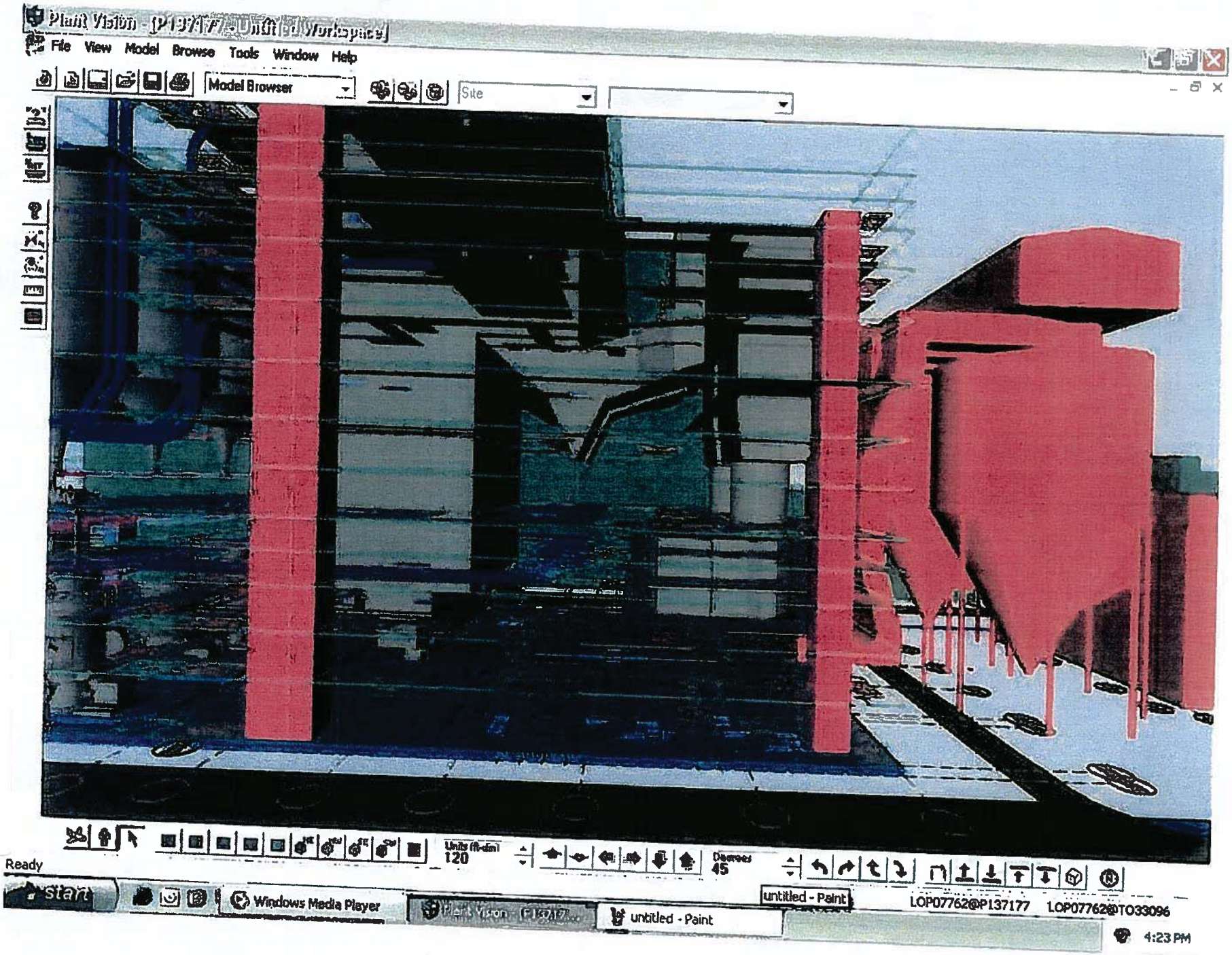


POWRTRAK®

OPPD Model

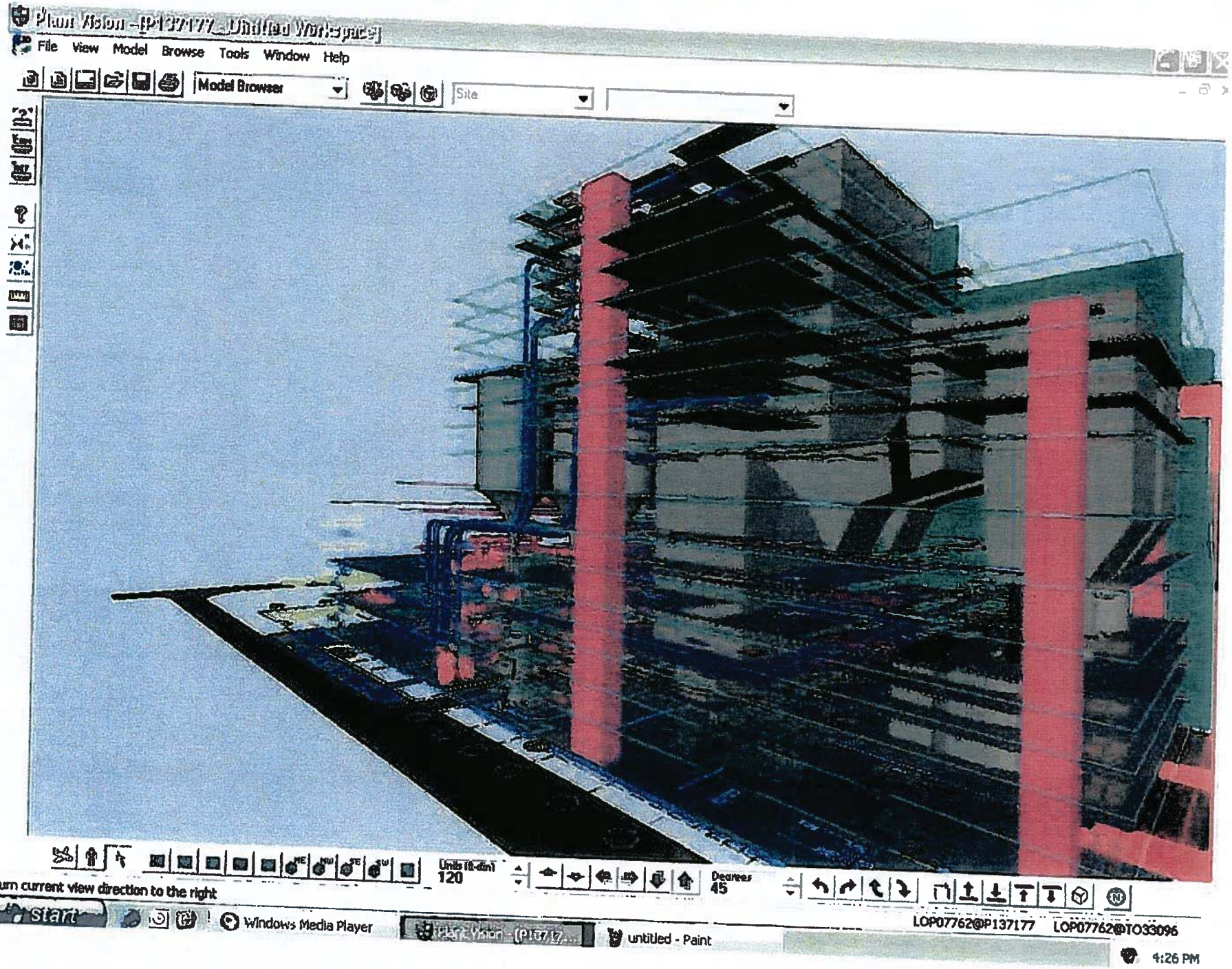

Plant Vision - [P137177 - Untitled Workspace]
File View Model Browse Tools Window Help
Model Browser
Site
Units (ft-din)
120
Degrees
45
Ready
Click here to begin
LOP07762@P137177
LOP07762@TO33096
start
Windows Media Player
Plant Vision - [P137177...
4:13 PM

File View Model Browse Tools Window Help
Model Browser
Site
Undo (0 of 20)
120
Degrees
45
untitled - Paint
LOP07762@P137177
LOP07762@T033096
Ready
Start
Windows Media Player
untitled - Paint
4:21 PM

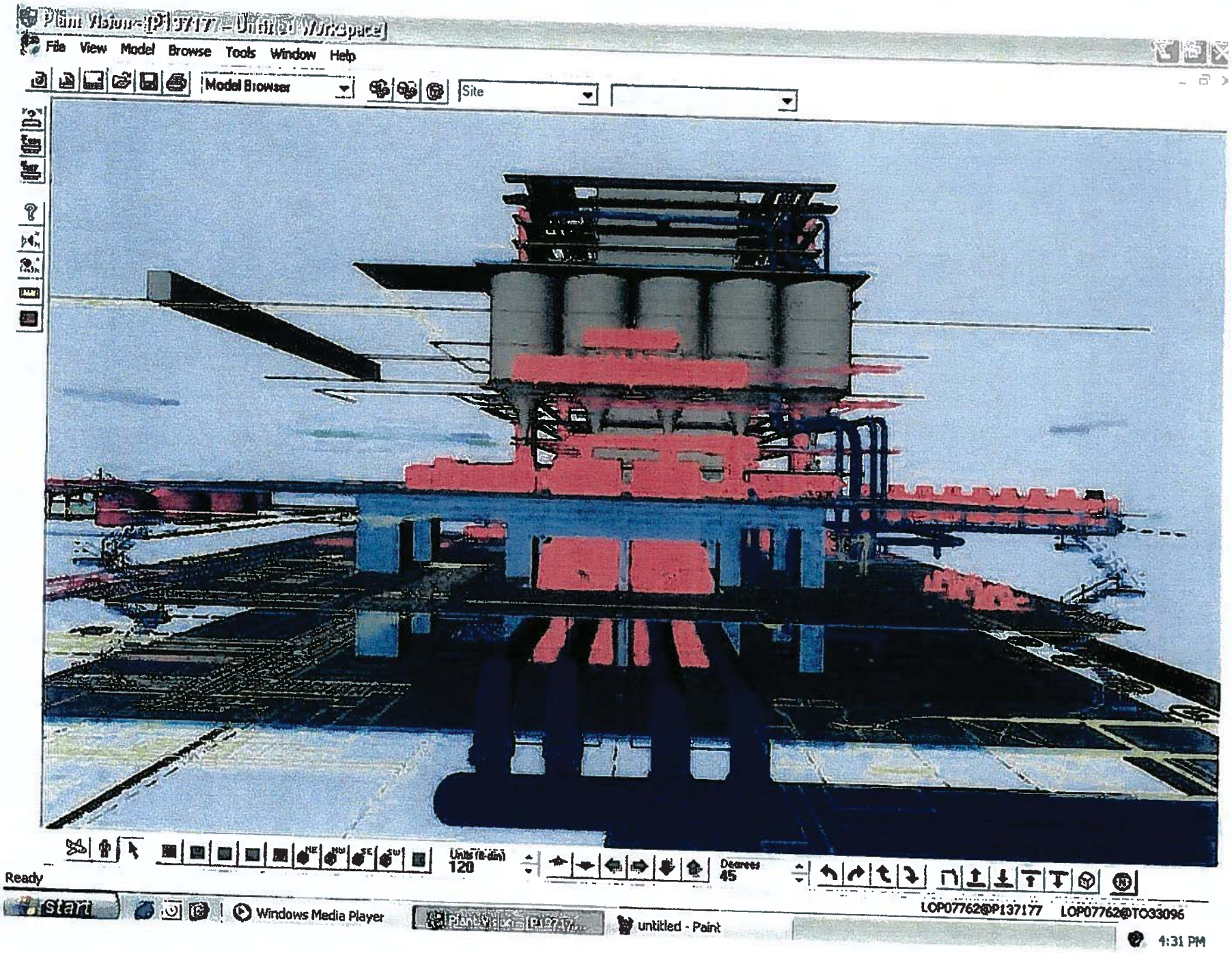


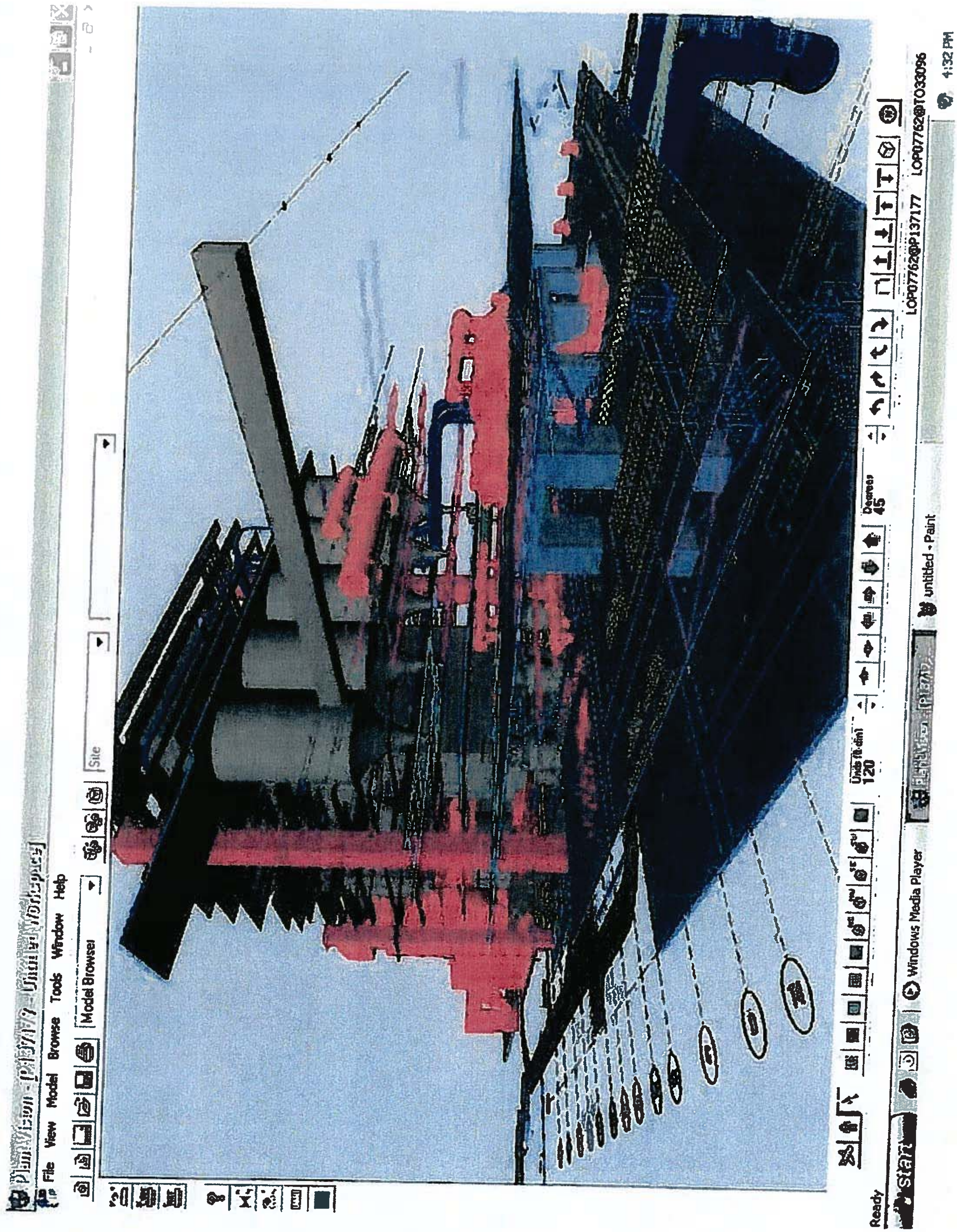
0271
Schedule KMR2010-19

File View Model Browse Tools Window Help
Model Browser
Site
Ready
Windows Media Player
untitled - Paint
4:24 PM

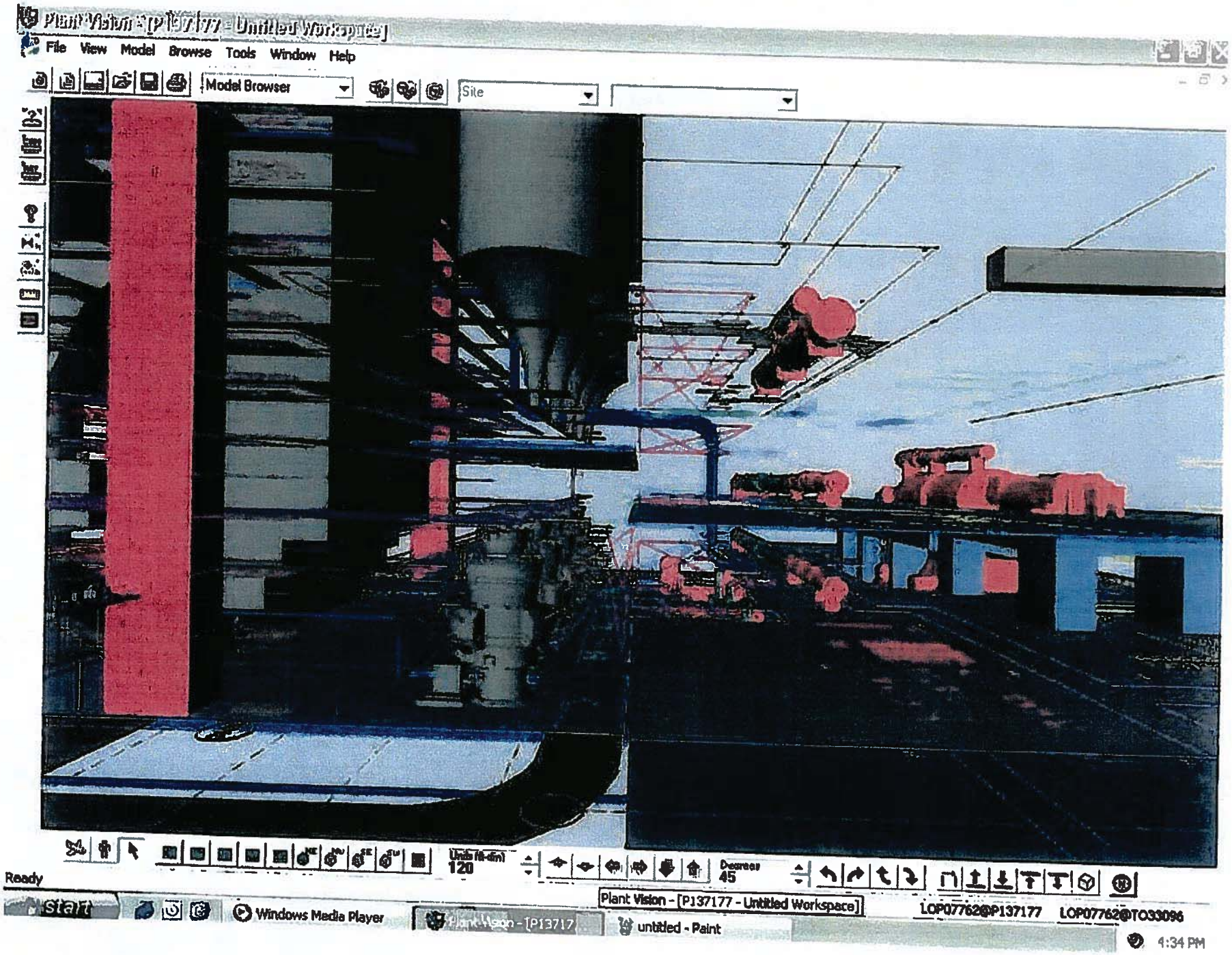


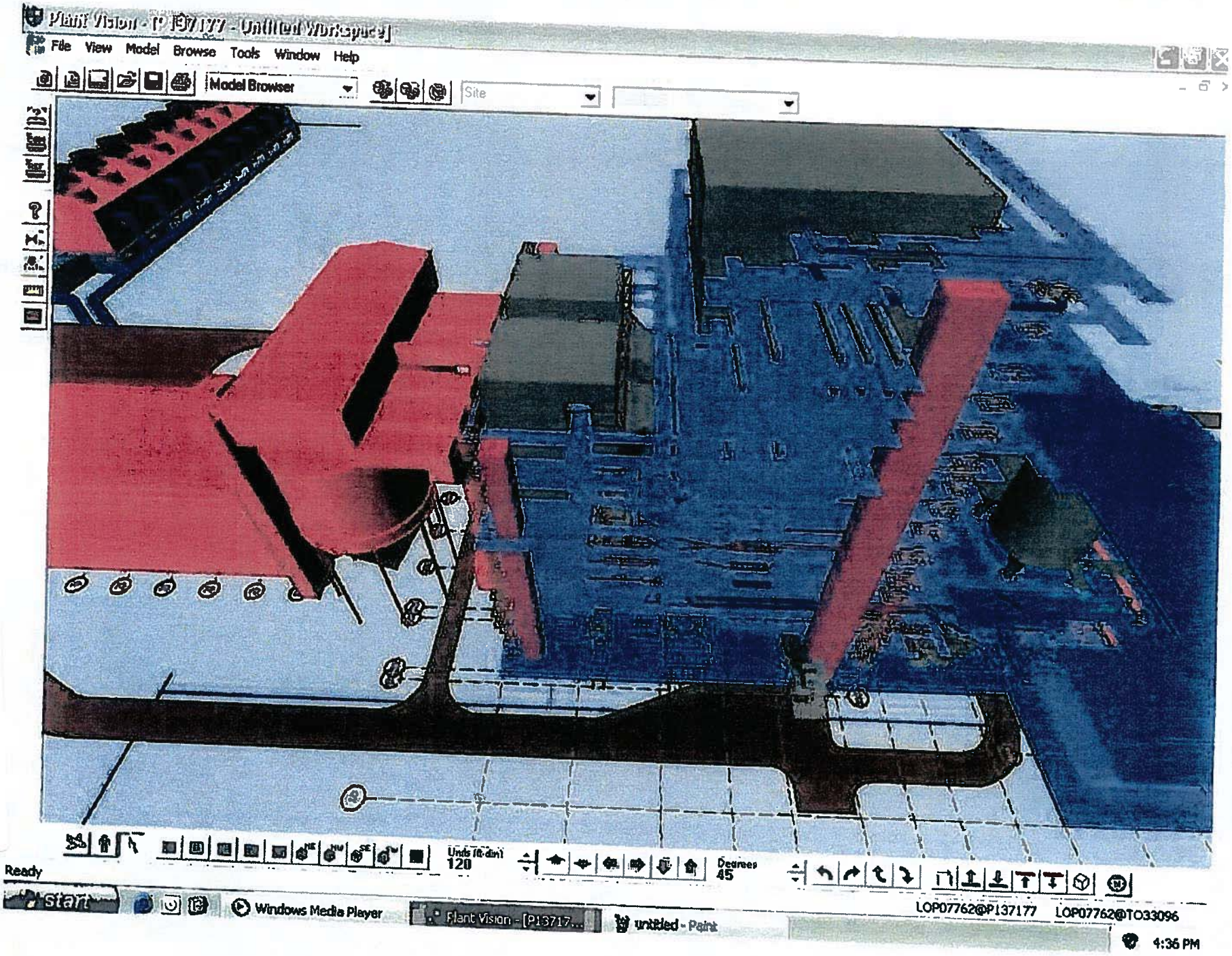
File View Model Browse Tools Window Help
Model Browser
Site
Ready
Windows Media Player
untitled - Paint
LOP07762@P137177
LOP07762@TO30096
4:26 PM

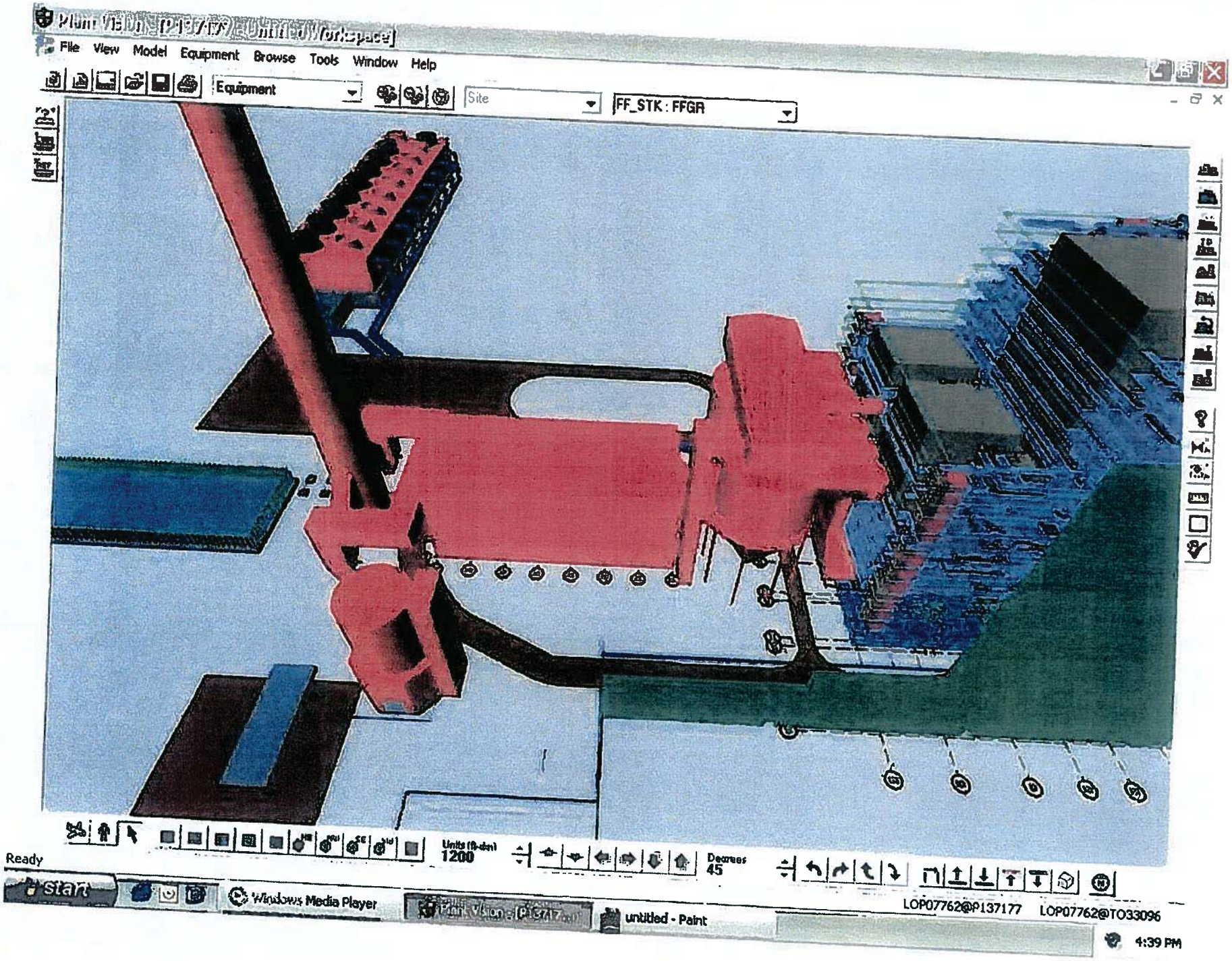

File View Model Browse Tools Window Help
Model Browser
Site
Units (ft-din)
120
Degrees
45
Ready
Start
Windows Media Player
untitled - Paint
LOP07762@P137177
LOP07762@TO33096
4:31 PM


File View Model Browse Tools Window Help
Model Browser
Site
Units ft-dm
120
Degrees
45
Ready
start
Windows Media Player
untitled - Paint
LOP07762@P137177 LOP07762@TO33096
4:32 PM

File View Model Browse Tools Window Help
Model Browser
Site
Toggle automatic positioning of clipping planes on or off
LOP07762@P137177
LOP07762@T033096
untitled - Paint
4:33 PM


Plant Vision - [P137177 - Untitled Workspace]
File View Model Browse Tools Window Help
Model Browser
Site
Ready
start
Windows Media Player
Plant Vision - [P137177 - Untitled Workspace]
untitled - Paint
LOP07762@P137177
LOP07762@TO33096
4:34 PM


File View Model Browse Tools Window Help
Model Browser
Site
Ready
Windows Media Player
Plant Vision - [P13717...
untitled - Paint
LOP07762@P137177
LOP07762@TO33096
4:36 PM



0280
Schedule KMR2010-19

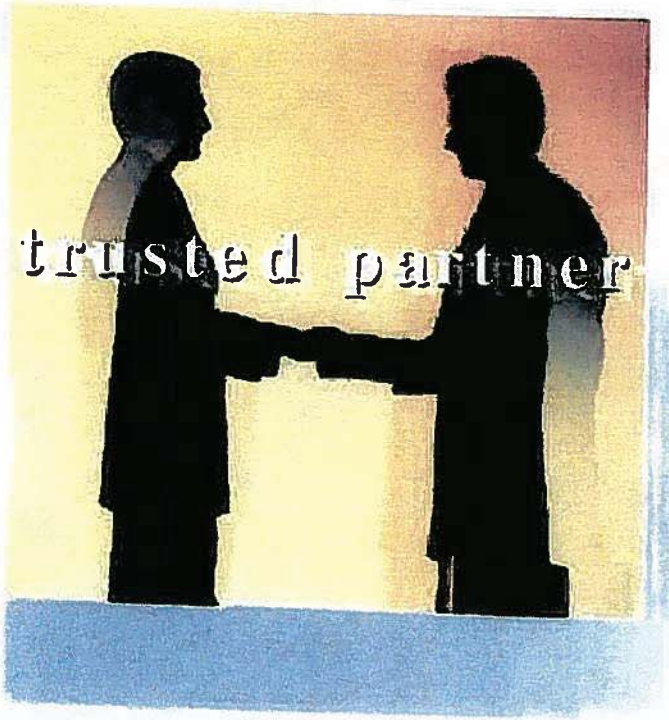
File View Model Equipment Browse Tools Window Help
Equipment
Site
FF_STK_FFGR
Ready
Windows Media Player
Untitled - Paint
4:40 PM

File View Model Equipment Browse Tools Window Help
Equipment
Site
FF_STK · FFGR
Specify the angle to rotate per button or keyboard press.
Rotation Increment
Windows Media Player
untitled - Paint
4:42 PM

Plant Vision - [PV Untitled Workspace]
File View Model Equipment Browse Tools Window Help
Equipment
Site
FF_STK_FFGR
Ready
Start
Windows Media Player
untitled - Paint
LOP07762@P137177
LOP07762@T033096
1:44 PM

File View Model Equipment Browse Tools Window Help
Equipment
Site
FF_STK_FFGR
Ready
Windows Media Player
untitled - Paint
LOP07762@P13177
LOP07762@T033096
4:15 PM

Working With Clients



"When WPS started the W4 venture, we stated that we needed to engage world class firms to accomplish our goal of W4. B&V is truly a world class firm supported by world class individuals. WPS is definitely the beneficiary of your talents."

-- Phil Hayes
Wisconsin Public Service on Weston Unit 4

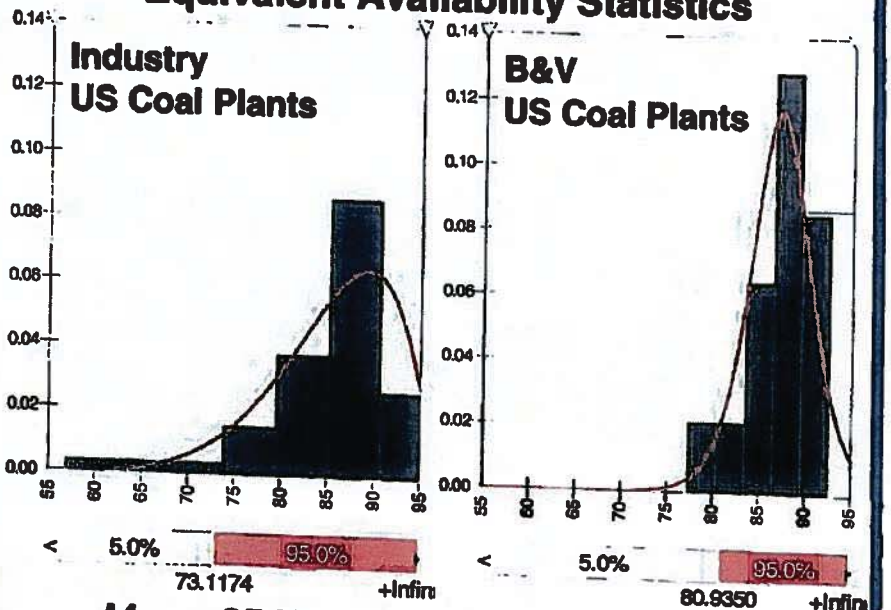
Black & Veatch References

- WPS (Weston Unit 4)
  - Phil Hayes
- OPPD (Nebraska City Unit 2)
  - Ken Roth
- Tri-State Generation & Transmission Association, Inc.
  - Tim Driver

Plant Performance – Our Design Approach Has Resulted in Significantly Higher Availability and Reliability

600+ MWe Coal Plants

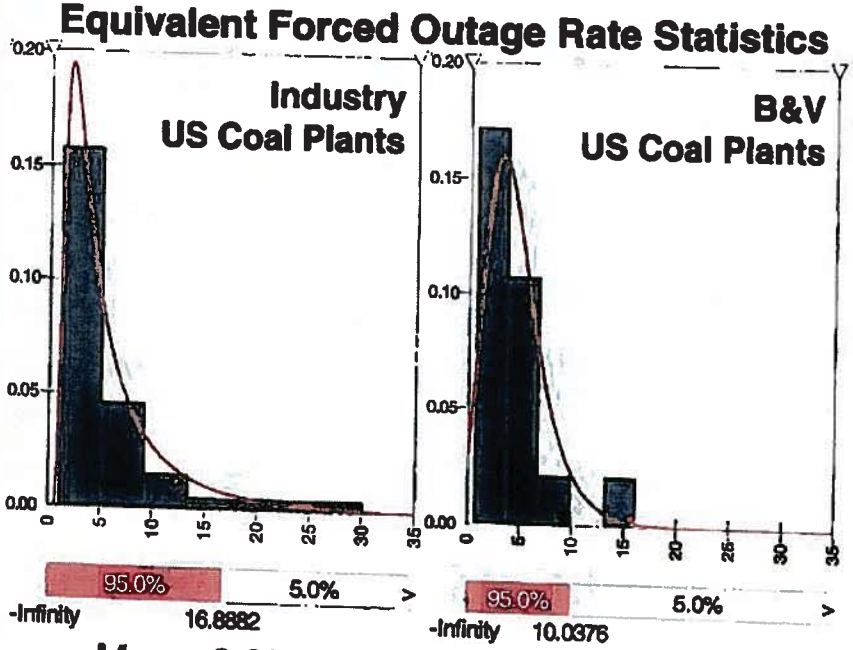
Equivalent Availability Statistics



Mean 85.7%
Sigma 7.2%
At Risk 73.1%

Mean 86.9%
Sigma 4.0%
At Risk 80.9%

Equivalent Forced Outage Rate Statistics



Mean 6.0%
Sigma 5.8%
At Risk 16.9%

Mean 4.6%
Sigma 3.7%
At Risk 10.0%

History Has Demonstrated 7% Advantage Over Competition

Source: North American Electric Reliability Council

Major Coal Plant Performance – The B&V 7% Advantage

Equivalent Availability	
Better Expected Value	+1.2%
Reduced Volatility	-3.2%
Improved Value At Risk	+7.8%
Equivalent Forced Outage Rate	
Better Expected Value	-1.4%
Reduced Volatility	-2.1%
Improved Value At Risk	-6.9%

B&V Brings Added Value to Our Projects and Their Owners

Benefit of 1.4% EFOR Advantage – $45 MWh Coal Plant Case

- B&V US Coal Plant EFOR Is 1.4% Better Than the EFOR of Other US Coal Plants
- $850\ MW \times \frac{8{,}760\ h}{yr} \times 1.4\% \cong 104{,}244\ MWh\ /\ Year$
- $\frac{104{,}244\ MWh}{Year} \times \frac{\$45}{MWh} = \$4.7$ **Million Per Year**

Direct Benefit of EFOR Advantage

**Source: NERC GADS Database*