NP

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[redacted]

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SCHIFF HARDIN MILESTONE SCHEDULE ANALYSIS

Schiff Hardin's advice to KCP&L Management in February 2005, **[redacted]** was not adhered to, resulting in unnecessary delays.

KCP&L's Management and Board of Directors retained Schiff Hardin as an advisor on construction and regulatory matters related to the Iatan Project. During a February 1, 2005, presentation to the KCP&L Board of Directors, (Schedule WPD-17) Schiff Hardin made a number of recommendations regarding major milestones and deadlines. While the Iatan Project was only one of many major projects in the Comprehensive Energy Plan (CEP), it was the most expensive and required the greatest level of management oversight. The following table summarizes the dates advised by Schiff Hardin, (in Schedule WPD-17), and the actual dates these activities were achieved according to Vantage's review of project documentation. Schiff Hardin began formal, on-site activity in August 2005 and since that time has provided regular reports to Iatan Project Management and KCP&L Senior Management and the Board of Directors. While Schiff Hardin is a law firm, it utilizes subcontractors with expertise in power plant scheduling, cost control and contract management. "**

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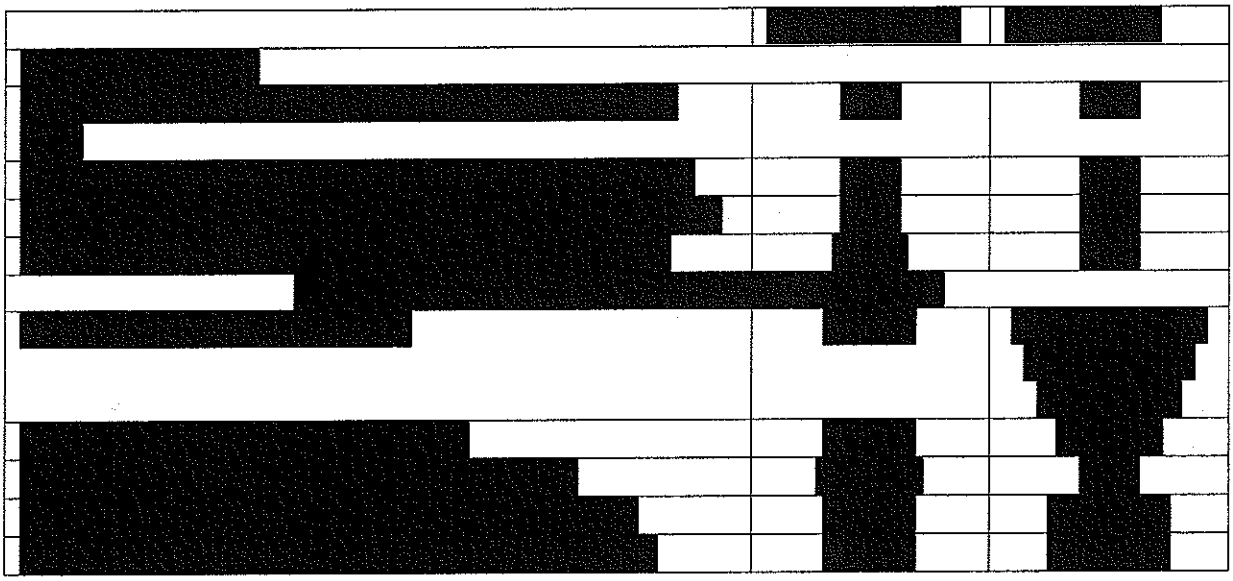


**"

WEATHER DELAY ANALYSIS

Q. Provide your analysis and conclusions regarding KCP&L claims that much of the project schedule delay was due to weather related delays.

A. On January 13, 2010, pursuant to Section 13, or 15 (d) of the Securities and Exchange Act of 1934, KCP&L filed a Form 8-K, (herein referred to as the "8- K"), in which Kansas City Power & Light Company (KCP&L) disclosed, "Due to construction delays and unusually cold weather, Great Plains Energy and KCP&L currently anticipate that the in-service date of Iatan No. 2 will shift approximately two months into the fall of 2010." During a briefing of the KCC, KCP&L representatives indicated that there was approximately 21 days of weather delay in December 2009 and January 2010.

Vantage, in an attempt to verify these delays, as they relate to construction delays and bad weather, requested details. In KCC 20100413 DR 372, KCP&L provided a two page summary of 59 delay claims as well as almost 2,000 pages of support documentation. "**

[redacted]**"

KCP&L did provide data from the "National Weather Service, Kansas City/Pleasant Hill, MO, Weather Data for November and December 2009 and similar data for January 2010. Our analysis of this data showed the following.

- November 2009 – Average temperatures ranged from lows in the 30s to highs in the 60s, maximum wind speed never went over 30 mph, precipitation was minimal, with three days of 0.4 to 0.5" and one day of 0.8" of precipitation.
- December 2009 – As expected it got colder. Average temperatures ranged from lows in the teens, with six days below 20 degrees to highs in the 40s, maximum wind speed showed one day over 30 mph, precipitation was minimal, with three days of 0.35 to 0.45".
- January 2010 –Temperatures during the first 10 days of January averaged below 15 degrees, with four days of 5 degrees or lower. The balance of the month was relatively mild. Maximum wind speed never reached 30mph, and precipitation was minimal.
- The only other noteworthy item was a letter from Alstom to KCP&L indicating that there might be frozen Unit 2 Auxiliary Steam supply Piping.

Q. Based on your analysis is there any prudent justification for delays due to bad weather in the latest reforecast?

A. No. All of the delays claims were for early in the project. "** [redacted] **" The evidence does not support weather delays in late 2009 or January 2010. Further, problems with frozen pipes in steam blow-related systems could have been avoided had the project been on schedule. In other words, schedule delays attributable to earlier KCP&L's mismanagement do not warrant cost consideration.

ENGINEERING CONCERNS

Q. Please discuss the results of your analysis regarding engineering on the Iatan project.

A. A key to success on the Iatan project was expediting the selection of the Owners Engineer and fast tracking of initial engineering activities to facilitate layout and foundation work. Our analysis shows that the delays in consummating a contract with B&McD, poor management of B&McD and a lack of timely and definitive interface between B&McD and major contractors resulted in delays, rework, poor productivity, delay claims, compression, restacking, increased staffing, and significant impacts to the schedule and cost of the project. Examples of these problems are included in Project Monthly Reports which are summarized in Schedule WPD-17.

KCP&L was late in selecting the Owner Engineer. ** [redacted] ** B&McD was selected in November 2005, but worked under a general services contract through January

2007 when the Engineering Contract was finalized. During this critical phase of the project, B&McD was working under a contract that was many years old. Working without a definitive contract, tailored to the specific Iatan projects, certainly could have been a cause for the substandard staffing decisions at B&McD.

"**[redacted]

[21]/ See Exhibit WPD-33 B&McD Audit Report.

[redacted]

All of these substandard practices imprudently caused delays and cost overruns at Iatan.

CONSTRUCTION CONCERNS

Q. What were some of the concerns expressed about construction in independent audits?

A. "** [redacted] **"

All of these substandard practices imprudently caused delays and cost overruns at Iatan.

BURNS & MCDONNELL PERFORMANCE

Q. Please discuss the performance of B&McD during the Iatan 1 & 2 project.

A. There was a significant delay between the selection of Burns & McDonnell and the signing of their contract[22] " ** [redacted] **". In the interim, B&McD continued work under a standard and generic Continuing Services Agreement that lacked the specifications necessary for such complex projects. The structured Time &

22/ See Exhibit WPD-33 B&McD Audit Report.

Materials contract with redefined Bonus/Liquidated Damage terms for the Iatan projects was not signed until January 2007.

Burns & McDonnell was retained to provide engineering and selected support services in support of construction. The B&McD contract pricing arrangement is based on time, (at agreed to rates) and materials, a form of contract which effectively shifts the bulk of risk to the owner, KCP&L, because it does not have cost overrun protections that other forms of contracts provide.

Even though the contract was not signed until January 2007, B&McD had been involved in the project for many years prior to that date. In fact, in the July 2006 CEP update, KCP&L stated: "KCP&L and the Owner Engineer, Burns & McDonnell, have prioritized the remaining procurements based on schedule considerations and mindful of the highly competitive market. KCP&L has issued Request-for-Proposal's (RFP's) for the Concrete Chimney, Boiler Feedwater Pumps, Cooling Tower, Distributed Control System Hardware and Surface Condenser and Air Removal System. These and other critical work packages will be secured during the third quarter of 2006." (Note, the Turbine contract to Toshiba and the Notice to Proceed to Alstom had been issued in April 2006.)

It appears that B&McD was unprepared to begin this project, with inadequate personnel, oversight, and engineering control systems in place. **[redacted].** Unfortunately, the recognition of these problems

occurred well after the engineering portion of the project began and after the cause of the delays had been put into place.

SCHIFF HARDIN ENGINEERING FEEDBACK

"**[redacted]**"

PROJECT REPORT COMMUNICATIONS

Weekly On-Site Meeting Reports

A review of critical vendor issues[23] addressed in each weekly on-site meeting indicated significantly more issues were raised with B&McD than any other contractor. Vantage reviewed every weekly report since early 2007 to see what types of issues were raised regarding timeliness or quality of work by various contractors, including B&McD. Vantage's first observation is that the minutes, as presented, lack the detail reasonably expected in this situation - to the point

[23]/ See Exhibit WPD-19

that it was completely non-existent in some situations. There is very little detail about specific disagreements and resolutions to previous concerns. Some observations include the following.

[redacted]

Quarterly Reports

Quarterly reports consistently indicated that engineering was high on the critical path list."**

[redacted]

[redacted]

- [redacted] **"

INDEPENDENT AUDITS OF B&MCD

"** [redacted]

[redacted]

24/ Exhibit WPD-33, B&McD Audit Report.

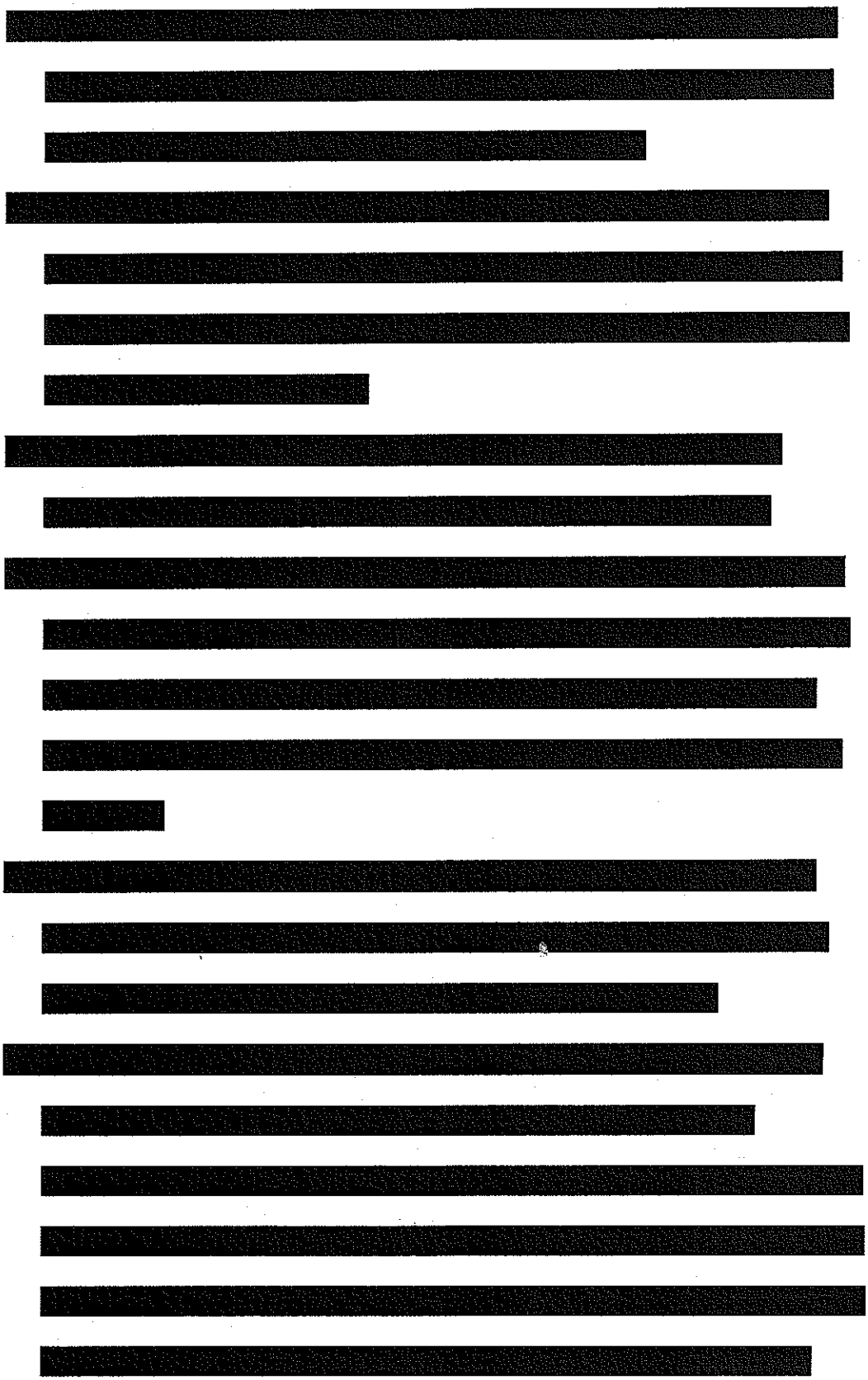
[redacted]**"

October 2007 B&McD Audit Findings Summary

"**[redacted]

[redacted]

25/ Schedule WPD-33 B&McD Audit Report.



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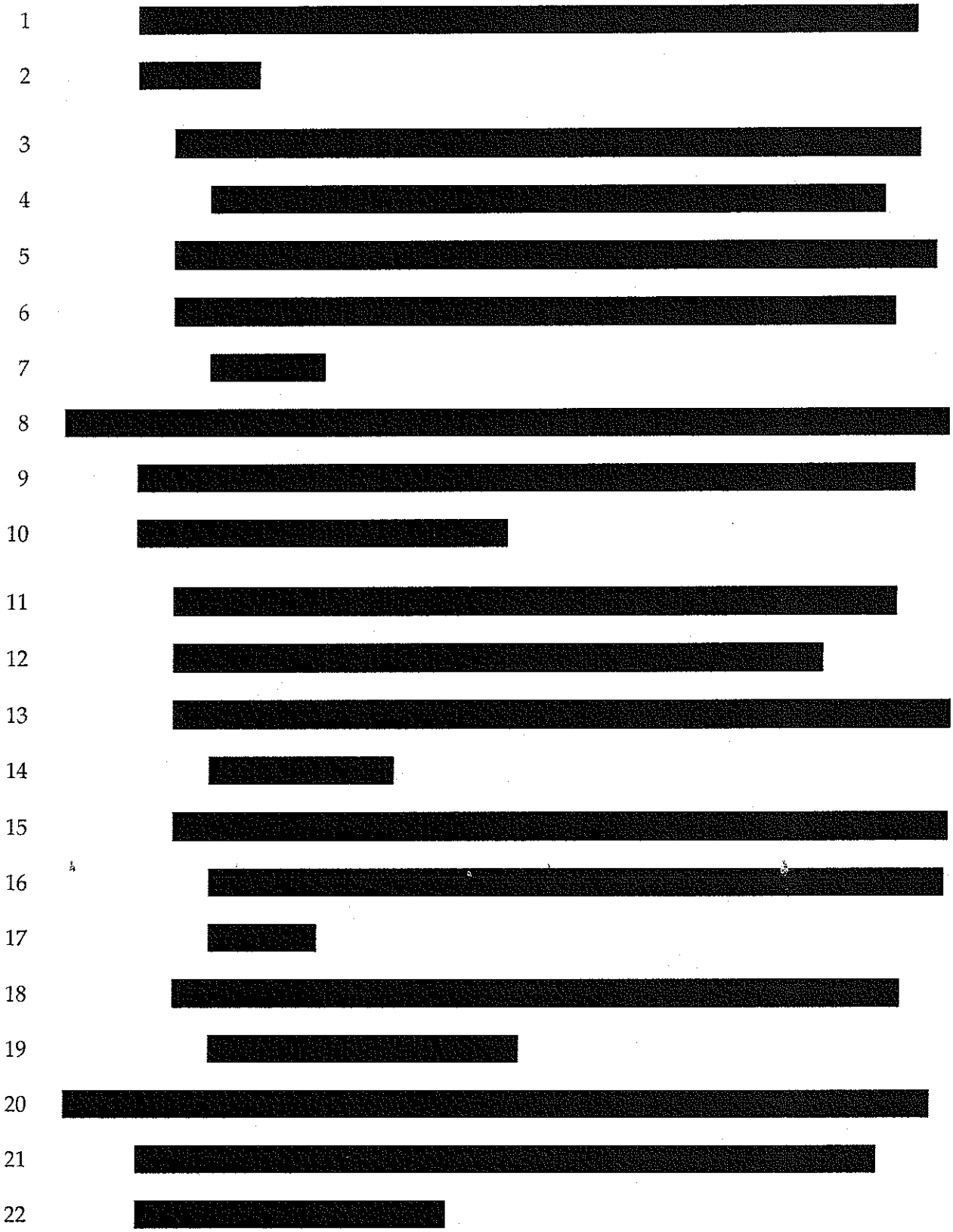


[redacted]

[26]/ See Schedule WPD-33 B&McD Audit Report.

[redacted]

[redacted]**"

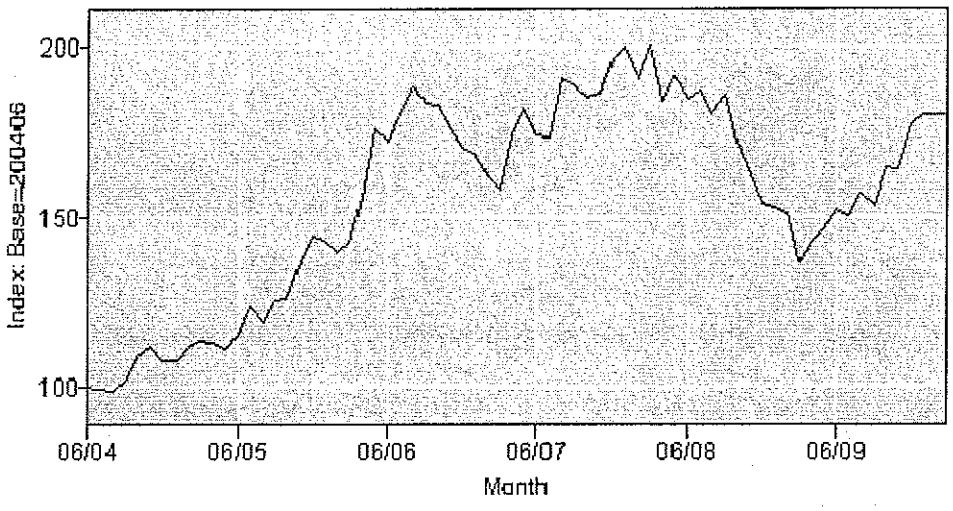
27/ See Schedule WPD-33 B&McD Audit Report.

COMMODITY ESCALATION ANALYSIS

Q. KCP&L and B&McD were concerned about the escalation of commodity and material prices as well as increasing labor rates due to a high demand for power plant-related crafts. What does your analysis show and how do you believe these issues impacted project costs?

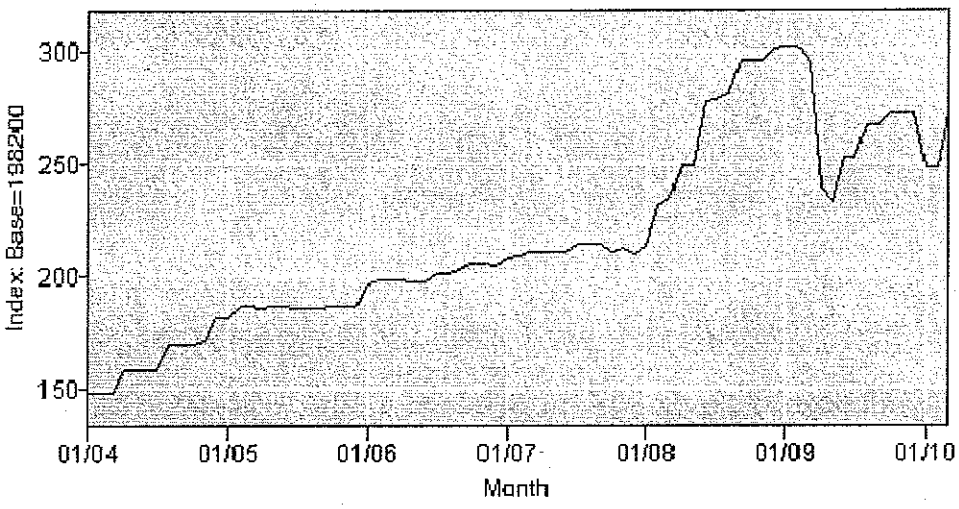
A. Vantage reviewed general trends in major commodity costs that might impact construction and material costs. There is significant evidence that many commodities saw escalating prices beginning in 2004. However, the facts show that commodity price escalation leveled off by mid-2006, meaning that contract estimates made after that point should not have been dramatically affected by increased costs. KCP&L hired a consultant to provide guidance on this issue. A study provided to senior management, including Mr. Easley, Mr. Downey and other senior CM staff indicated that the concerns with increasing commodity costs were largely over. This document, titled "Tailwind Behind commodities Waning" provided by G7Consultig Group was issued on November 22, 1005. It is provided as Schedule WPD 22 The following graphs from the U.S. Bureau of Labor Statistics provide some insights.

Exhibit WPD-22A
Group: Metals and Metal Products
Item: Power wire and cable
Series Id: WPU10260332
Not Seasonally Adjusted
Base Date: 200406



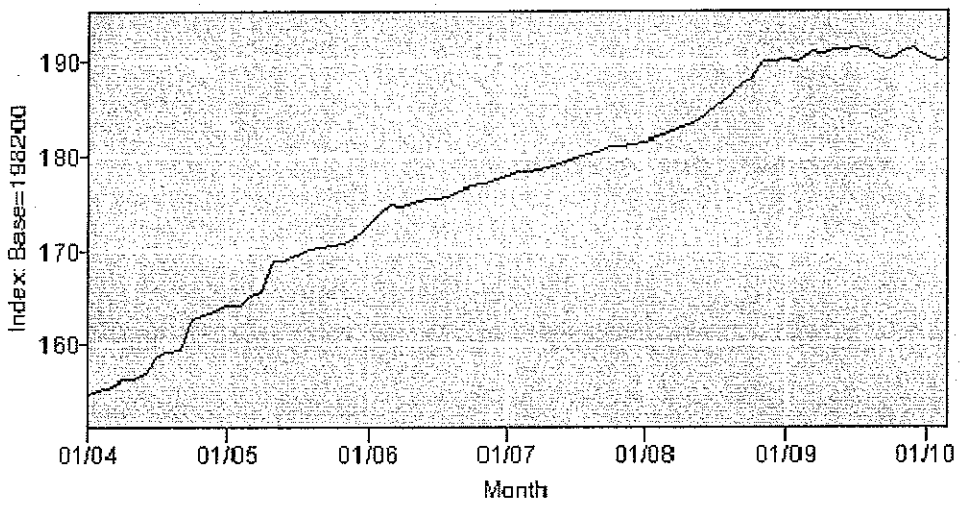
A review of this data, which encompasses power wire and cable, indicates that prices peaked in mid-2006, followed by a dip and another peak in mid-2007. This is significant as this was the timeframe in which Kiewit was preparing its bid for the balance of plant work on Iatan Unit 2. One would expect that Kiewit, using current prices, would not see significant increases in commodity costs for this category.

Exhibit WPD-22B
Group:Metals and metal products
Item: Pressure pipe and fittings, ductile iron
Series Id: WPU10150237
Not Seasonally Adjusted
Base Date: 198200



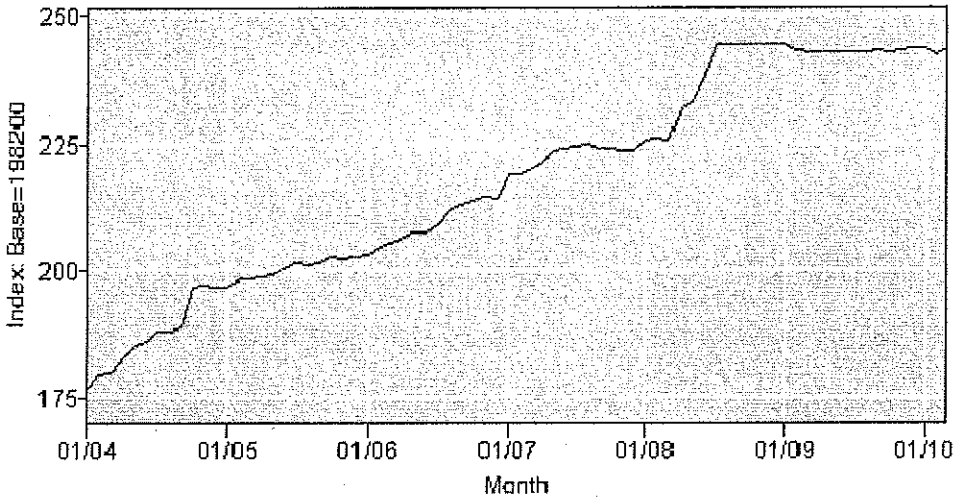
A review of this data, which encompasses pressure pipe and fittings, and ductile iron, indicates that prices were level until early in 2008. This is significant because Kiewit would have purchased almost its entire pipe for the balance of plant work on Iatan Unit 2 by that time. One would expect that Kiewit, using current prices at the time of its bid, would not have seen significant increases in commodity costs for this category prior to receipt of materials.

Exhibit WPD-22C
Series Id: WPS112
Seasonally Adjusted
Group: Machinery and equipment
Item: Construction machinery and equipment
Base Date: 198200



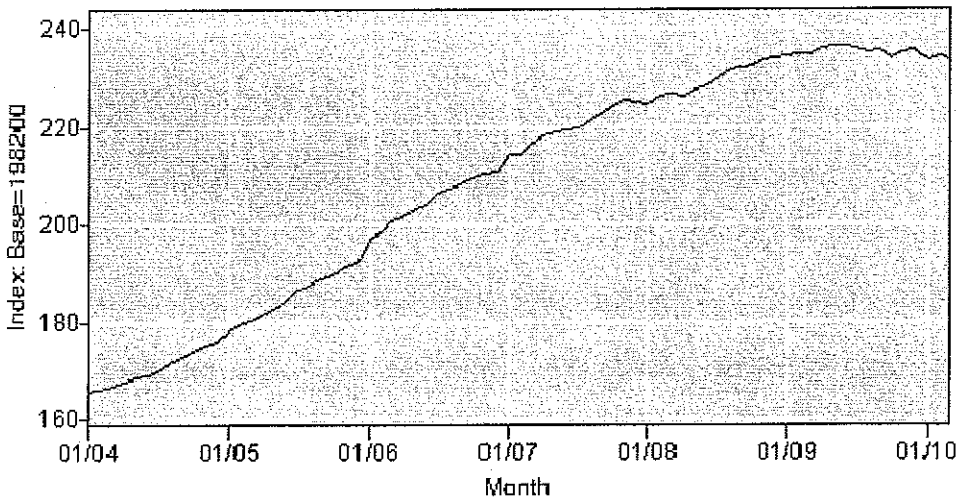
The data for construction machinery and equipment shows an approximately 5% increase in costs from January 2006 to January 2008.

Exhibit WPD-22D
Series Id: WPU1133
Not Seasonally Adjusted
Group: Machinery and equipment
Item: Welding machines and equipment
Base Date: 198200



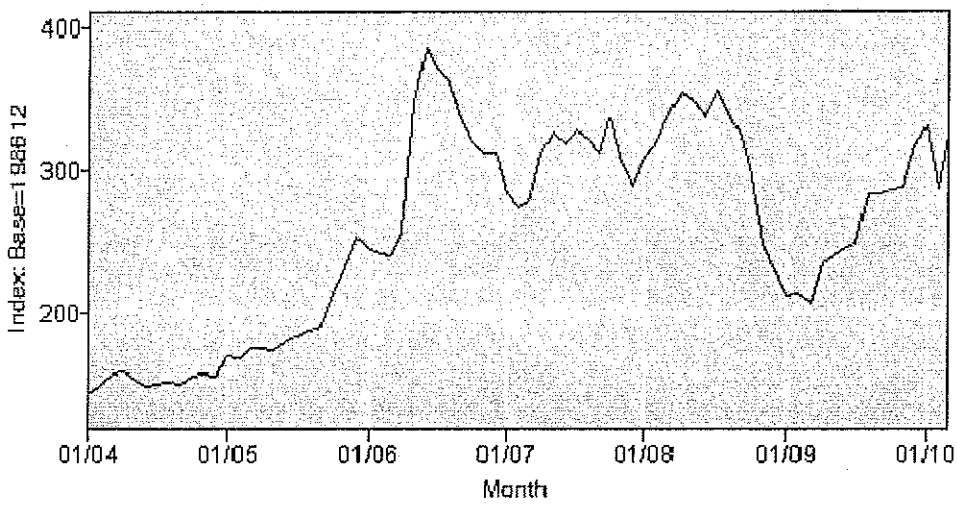
The data for welding machines and equipment shows an approximately 10% increase in costs from January 2006 to January 2008.

Exhibit WPD-22E
Series Id: WPS132
Seasonally Adjusted
Group: Nonmetallic mineral products
Item: Concrete ingredients and related products
Base Date: 198200



Concrete products rose steadily from early 2004 until mid-2008. One would expect that there would be some impact early in the project. However, KCP&L believes the use of a batch plant on-site, helped to mitigate prices somewhat.

Exhibit WPD-22F
Group: Metals and metal products
Item: Copper and copper alloy wire & cable, bare & tinned
Base Date: 198612



Prices for copper and copper alloy wire & cable, bare and tinned, was skyrocketing in early 2006, with a peak in mid-2006.

Our overall conclusion regarding commodities, is that while there was an increase, most large procurement packages such as the Alstom provided Boiler and AQCS and the turbine Generator were already purchased with fixed prices. Further, the BOP purchases by Kiewit should have reflected many of the escalated commodity costs at the time their bids were developed in late 2007.

CONTRACTOR CONSTRUCION PERFORMANCE

EARNED VALUE MANAGEMENT

Q. How is contract performance generally measured in the construction industry?

A To support the oversight and management of the Iatan Unit 1 and 2 projects, the KCP&L project management team selected the Earned Value Management technique. Earned Value Management (EVM) is an industry standard, integrated system of project management and control that enabled KCP&L and the various contractors to monitor the progress of a project in terms of integrated cost, schedule, and technical performance measures.[28]

Earned value project management involves planning work to a manageable level of detail such that it is feasible to allocate a portion of the budget to each planned work unit (work package), and then tracking progress by the accumulated "value" of completed work units. As work is performed, it is "earned" on the same basis as it was planned, in dollars or other quantifiable units. As the work units are completed, the project earns the budgeted value associated with those work units. This method associates a dollar value with work completed so that it can be compared with the actual spending (to determine cost variance – potential cost overruns), and the planned spending (to determine schedule variance – potential schedule slippage). In this manner, planned and actual spending is integrated with actual work performed. The integration provides greater visibility into the real project status for all stakeholders and thus creates a scenario for better management of risks, for early determination of whether a project is in trouble, and for estimating what will be needed to complete it.

[28]/ See Exhibit WPD-23 for additional detail and explanation regarding construction productivity.

Although tracking earned value occurs during project execution, it cannot be accomplished if appropriate project planning and budget allocation has not occurred up front.

Earned Value Activities

Define the Work: The Project Manager must decompose the project into distinct discrete manageable tasks or groups of tasks, (work packages), with decisive outputs and specific measurable entry and exit criteria. Each work package has a short duration, or can be divided into a series of milestones whose status can be objectively measured. Each work package can be assigned a start and finish date, a budget value, and can be integrated with higher-level schedules. This activity is often referred to as developing the Work Breakdown Structure (WBS). It is important to balance the level of detail in the WBS with the needs of the project, with the ultimate goal being the ability to realistically estimate the cost of accomplishing each task, (earned value). Providing too much detail creates an overload of data, creates a tracking nightmare, and stifles the creativity of developers. Lack of detail may mask vital information.

Schedule and Budget: Once the effort is identified through the WBS, the project manager must prepare a budget and resource-based schedule for accomplishing the work. What is critical to being able to track earned value is that a portion of the budget is allocated for each work package that comprises the WBS and that the WBS adequately defines all work necessary to meet the agreed-upon requirements for the project. The Primavera p3, resource-based scheduling tool was utilized for the Iatan Unit 1 and 2 projects.

Measure performance: This activity focuses on performance, not just planned vs. actual spending. It involves tracking a number of measures starting very early in the project, and analyzing the data to determine real project status. Important measures are listed below.

Primary Metrics

- Budget Cost of Work Scheduled (BCWS): The dollars (or hours) planned for the effort. The cumulative planned expenditures would equal the total dollars budgeted for the effort for the specified time period.
- Actual Cost of Work Performed (ACWP): The cumulative actual expenditures on the effort viewed at regular intervals within the project duration.
- Budgeted Cost of Work Performed (BCWP): The cumulative budgeted value (dollars or hours) of work actually completed.

Derived/Calculated Measures

From the above three primary measures it is possible to derive measures that can be used to accurately assess the status of the project and predict its future state.

- Cost Performance Index (CPI): The cost efficiency factor representing the relationship between the actual cost expended and the earned value. CPI = BCWP/ACWP. A CPI $\geq$ 1 suggests a relatively efficient cost factor, while a CPI <1 may be cause for concern.
- Schedule Performance Index (SPI): The planned schedule efficiency factor representing the relationship between the earned value and the initial

planned schedule. SPI = BCWP/BCWS. A SPI ≥ 1 is good. SPI < 1 suggests actual work is falling behind the planned schedule.

Earned value credit should be binary, with 0 percent being given before task completion and 100 percent given when completion of each work unit is validated. Establishing specific measurable exit criteria for each task makes it easier to track task completion, and thus credit the earned value of the task to the project so that the earned value of the project at any given point in time is obtained by "simple math" rather than by subjective assessment.

Communication of Performance Status

Tracking earned value is of little value if the estimating and analysis capability that it provides is not used to manage the project. Although originally required for reporting project status to the acquirer, in recent years there has been a migration of focus. EVM is now viewed as a project management technique, as well. Its usefulness is broader than simply reporting project status up the management chain. There are some important reasons to communicate the project status, (represented in terms of earned value), to all stakeholders.

- Promote Accountability: When developers understand how their individual work, or lack thereof, influences the project, they tend to be more focused on their specific work goals. They also better understand the significance of estimating the amount of work needed to complete specific tasks. There exists a mindset among some project managers that they should "protect" their developers from the distraction of project metrics. In reality, communicating project status to the development staff

tends to establish a sense of accountability for their assigned pieces of the project and often results in more realistic estimates for completion of future tasks.

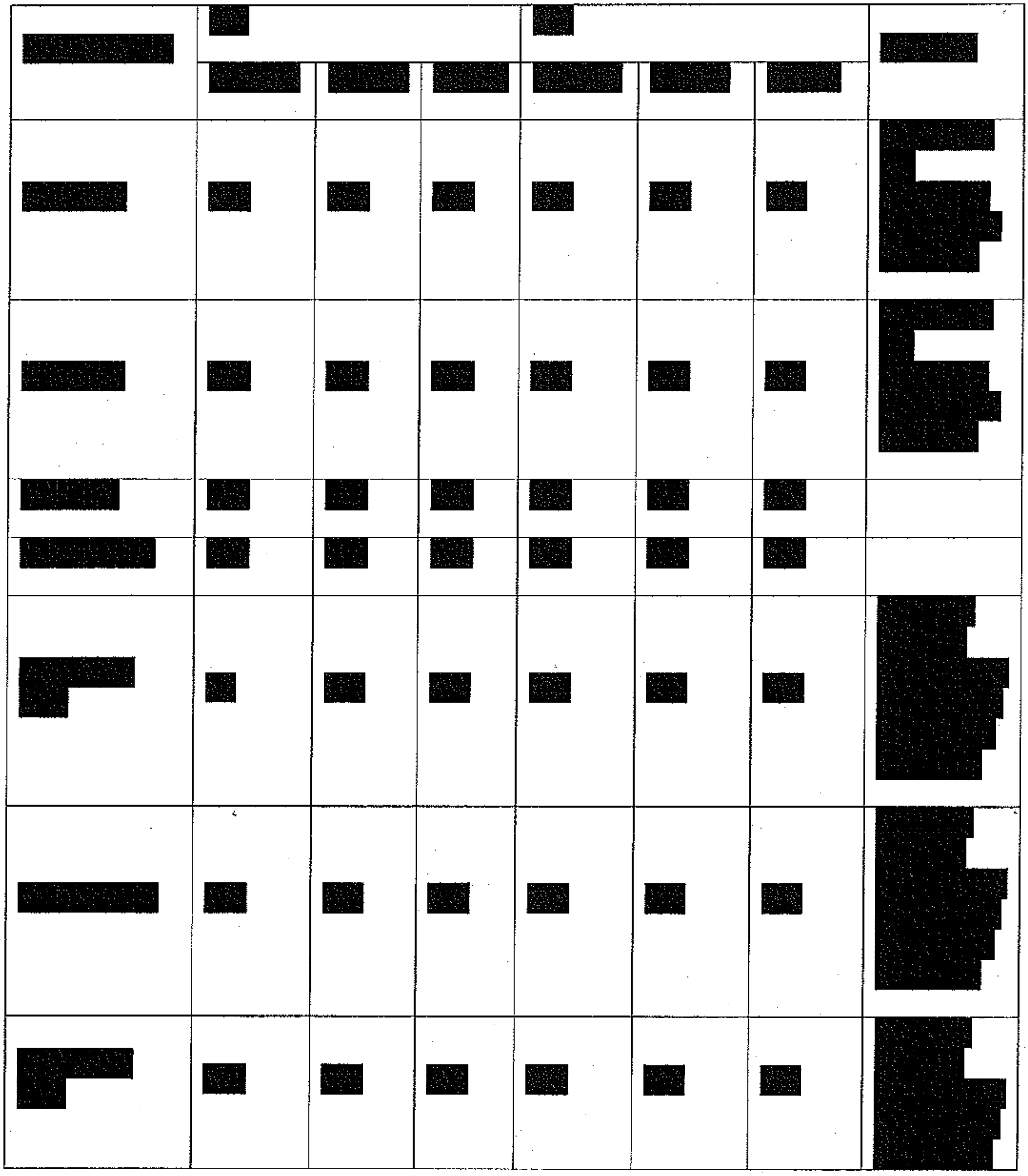
- Status Reporting: Reporting real project status, including earned value, at regular intervals provides an opportunity to address potential problems early in the project when it is still possible to resolve problems and avoid cost overruns and schedule slippage. The project team takes a proactive approach to prevent problems from occurring. The project management team uses the information to resolve issues that are beyond the control of the project team. The time interval should be at least monthly, regardless of the size and duration of a project, and more frequent for some projects. Many practitioners experienced with earned value management indicate that the project team should review project earned value weekly, because it can alert the team to specific problem areas before they develop into major problems.

Project Performance Profile

Q. What are the specific measures used on Iatan and what results were achieved?

The following is a summary of the key cumulative performance metrics, (SPI & CPI), for each of the major contractors - B&McD, Alstom and Kiewit - for the period of major construction, May 2008 through December 2009. The data was

taken from the monthly Iatan Unit 2 Status Report's Level 2 schedules and summaries. (Schedule WPD-24[29])"**



[29] / Only the pages with performance data from the Status Reports are included in the Exhibit.

[redacted]

**"

An analysis of the data clearly indicates that Alstom's and Kiewit's cost and schedule performance continually failed to meet expectations during the above critical phase of construction. "**[redacted]

[redacted]

[redacted]**". This inefficiency resulted in additional compression costs for the remaining contractors, most specifically Kiewit. In addition, Alstom's poor schedule performance resulted in sequencing problems with the other dependent contractors, especially Kiewit.

As per the December 2009 Monthly Report, Kiewit's inefficiency resulted in a cumulative CPI of"** [redacted]**" This leads Vantage to conclude that performance fell far below the levels KCP&L needed for a successful project, resulting in imprudent costs and schedule delays as detailed throughout this testimony.

CONSTRUCTION TURNOVER PROCESS

A common pitfall in managing construction projects is the commencement of the qualification and validation process before all the necessary project installation activities are complete and the turnover documentation is in place. To prevent this from happening, it is necessary to formalize the process for turning projects over from the engineering and construction team to the start-up team.

The Construction Turn Over (CTO) process is utilized to confirm that the project installation and debugging phase is complete and that the turnover documentation, (e.g. functional/technical specifications, system descriptions, and O&M manuals), is complete.

In March 2009, the KCP&L Iatan 2 Project Management Team began scoping the activities required to support the CTO process. The Iatan 2 CTO process was utilized to manage the transfer of a given system from the construction team to the start-up team. The KCP&L team identified "**[redacted]**" The KCP&L Engineering Coordinator was responsible for coordinating the engineering support of each CTO package. Examples of typical CTO packages are as follows.

- Boiler Water Circuit.
- Feedwater System.
- Burners.
- Fans (PA, FD & ID).
- Turbine.
- Generator.
- Power Transformer.
- Distributed Control System.

While the CTO process did provide an effective method for transferring a given system from the construction phase to start-up, delays in the turnover of

various CTO packages, due to re-work and poor quality issues resulted in significant project schedule slippage.

PRODUCTIVITY SUMMARY

Q. What was the impact of this inefficient work?

A. In summary, the full value of the EVM system is derived from an up-front, comprehensive project management plan. KCP&L's delay in making critical project management staffing decisions to support the implementation a hybrid EPC/Multi-Prime project negatively impacted the initial project plan and limited the potential for completing the associated projects on schedule and within budget. The convoluted contract for the BOP work with Kiewit was a direct result of poor up-front planning that resulted in KCP&L taking on undue monetary risk for all compression, sequencing and project acceleration issues. All costs associated with unreasonable project inefficiencies should be excluded as imprudently incurred because such costs are due to actions that fell below the standards set by B&McD in its initial budget estimates and KCP&L's CM desire.

This inefficiency had a direct cost for each of the two major contractors. An estimate of these costs is shown below. We would note that even though Alstom had a fixed cost contract, this inefficiency let to numerous claims for additional funding and resulted in the settlements with Alstom. Kiewit, on the other hand, had a contract that provided them with reimbursement for their inefficiency."**

[redacted] **

Q. Did Alstom and Kiewit willingly provide CPI and SPI information to the CM team for tracking?

A. No. Both companies were reluctant to provide this information. "**[redacted]**"

Q. What are the ramifications of poor productivity by a contractor?

A. Any project of this size has problems. KCP&L had overall responsibility for identifying the problems and responding to them. While Alstom, the AQCS and Unit 2 Boiler contractor and Kiewit, (the Balance of Plant contractor), were the largest contractors, there were many others as well. For example, Babcock & Wilcox had responsibility for the Unit 1 economizer project. This work is in the same small area that both Alstom and Kiewit have significant work as well during the Unit 1 outage. When contractors have low productivity or require

changes in the sequence of their activities, a number of problems can occur, such as those listed below.

Schedule Compression: occurs when a schedule slips and more work than was originally planned is required in a remaining work period. Schedule compression is the shortening of the project schedule without affecting the project scope. It alleviates bottlenecks without sacrificing the project schedule.

Congestion: is the result of needing to employ an increased number of workers, in a given area, than originally planned, either because of compression or low worker productivity. As of December 9, 2008, there were approximately "**[redacted]**"workers on-site in support of both the Unit 1 overhaul and the Unit 2 construction, which is significantly above the original worker estimate.

Re-sequencing: occurs when it is necessary to change the planned order of work in a given area. This can cause claims by other contractors who have to change their scheduled plans.

All of these problems occurred at Iatan due to unreasonably low productivity that failed to meet standards set by KCP&L, its owner engineer and its consultants for the project.

CONSTRUCTION AUDITS

Q. What are construction audits and why are they necessary on a project such as Iatan?

A. Construction audits review a broad range of topics related to individual contractors or the construction management process as a whole. They provide

valuable feedback to the CM team and are used to both avoid and to address construction problems. One of the most important sources of information for KCP&L during the project was a series of construction audits. Most of these audits were performed to address growing problems. In addition to the information gleaned from audits conducted, it is interesting to note areas that were not audited because they are relevant to the problems experienced on this project. A summary of all audits is provided in Schedule WPD-21.

Q. Were these audits done early enough in the project to identify problems, deficiencies or failures in order to correct them?

A. Unfortunately, many of the audits were not performed until problems arose. While some audits needed to be performed later in the project, many clearly would have provided valuable feedback had they been performed much earlier. The table below provides a view of when audits were completed."**

**"

Q. Please summarize the results of some of the more important audits.

A. One key audit, the Strategic Talent Solutions Effectiveness Audit has already been discussed above. Other key audits that provide perspective are summarized below.

JULY 2007 CONSTRUCTION PROJECT AUDIT SUMMARY

"** [redacted]

[redacted]**"

In total, fifteen findings were presented for management attention in this audit.

IATAN CONSTRUCTION PROJECT – THIRD QUARTER 2007 COST AUDIT

This follow-up audit (Schedule WPD-27) found "**[redacted]**"

LABOR PRODUCTIVITY AUDITS

Labor productivity is a key to success on any large project. In order to get a sense of the cost of various work options and to help with decision making,

KCP&L commissioned a study. An outside consulting firm, Schumacher Consulting LLC., prepared two reports titled Area Labor Study for Iatan KCP&L Unit 2 Project, dated February 13, 2006, (Schedule WPD-25) and February 15, 2008 (Schedule WPD-29). Both of these Reports provide a great deal of insight, information and useful recommendations regarding issues related to labor supply, rates, efficiency, optimum scheduling and general management policies.

2006 Area Labor Study

The first Report highlighted the potential for "**[redacted]

[redacted]

[redacted]**"

2008 Area Labor Study

The second Report was intended to provide information used to support management decisions on contracting strategy and techniques for attracting and retaining sufficient critical manpower.

The very first finding stated that "** [redacted]

[redacted]

[redacted]**"

CONTRACT MANAGEMENT

Ultimately the contracts between KCP&L and their contractors dictate how disputes are resolved.[30] Vantage reviewed many of the key contracts to identify the details on dispute and change order resolution. Many contracts KCP&L entered into with major contractors have "**[redacted]

[30]/ Contracts with Alstom, Kiewit, B&McD and Kissick were all reviewed.

[redacted][31]

[redacted]**"

As a result of the early root cause problems, the project is facing significant pressure to staff at unanticipated levels with higher costs associated with project compression, inefficiency and management stress. Based on Schiff Hardin's February 22, 2006, Status Report, B&McD estimated that"** [redacted]

[redacted]**"

There were over "** [redacted]

[redacted]**". To accommodate these additional

31/ Major contracts, including the B&McD contract (attached as Schedule WPD-11), the Alstom contract (attached as Schedule WPD-31), and the Kiewit contract (attached as Schedule WPD-35), were reviewed for detail regarding dispute resolution.

32/ [redacted] 12/12/06 Status Report on Comprehensive Energy Plan Projects, page 3.

personnel, new parking lots, gates, support facilities, training, etc. were needed. Many work areas were very crowded resulting in inefficiency.

The cost of increased hours, days and multiple shifts is large. The labor productivity reports cited above calculated that the cost of 5-10's would be about "** [redacted]

33/ Labor study by Schumacher Company.

[redacted]

The net result of substandard or unreasonably late action related to contractor productivity and disputes, as well as engineering issues, directly impact the ability to complete the project in a cost effective and timely manner.

IATAN 2 T-23 ISSUE REVIEW

ISSUE DESCRIPTION

Q. Please describe the issue related to welding concerns on boiler tubes that are made of a material referred to as T-23.

A. Modern supercritical boilers require the application of more exotic metal alloys that can operate for extended periods of high temperatures of 1080°F and at pressures in excess of 3,900 psi. Alstom has applied an American Society for Testing and Materials (ASTM) approved T-23 material for application in the high temperature zone of the Iatan Unit 2 boiler. This material was provided by the Alstom Bruno facility in the Czech Republic. It should also be noted that Alstom

has utilized the T-23 material at other projects in the U.S., China and Taiwan, including the Xcel Energy Comanche 3 boiler.

"**[redacted]

[redacted]

34/ Churchman KCC Direct Testimony 12-17-09, page 24, Line 1.

[redacted]

35/ Notes from KCP&L Presentation to KCC on 8/19/09.

36/ KCP&L and Alstom Settlement Agreement, dated January 13, 2010, Section F, page 11.

[redacted]

8. [redacted]**"

Q. Are there potential cost impacts to KCP&L that have not been addressed?

A. While the actions by Alstom, listed above, will "** [redacted] "**

Q. Will there be any impact to the scheduled start-up of Iatan Unit 2 due to the T-23 issue?

A. It is not "**[redacted]37**"

Q. What action should the Commission take at this time?

A. We believe that KCP&L should be ordered to continue analyzing the issues as required, monitoring costs and schedule delays and preparing a regular report on both costs Alstom is responsible for and costs associated with schedule delays and additional effort by KCP&L and their experts.

37/ Schedule WPD-29 - Public Service Company of Colorado Semi-annual Progress Report for the Comanche Project to the Public Utilities Commission of Colorado, Docket No. 05M-511E, Dated December 14, 2009, Page 8.

G. IMPACTS OF MISMANAGEMENT

Q. What is the purpose of this section of your testimony?

A. This section of my testimony discusses the impacts to cost that result from the mismanagement discussed above. It also includes analysis of key contracts for which disallowances are proposed in Section D of my testimony.

OVERTIME PRODUCTIVITY IMPACT AND COSTS

Q. What is the impact on productivity due to working extensive levels of overtime?

A. The two studies commissioned by KCP&L and conducted by Schumacher Consulting, (Schedules 28 & 29), provide a detailed explanation of what happens when workers must work extensive hours. As per the Schumacher Consulting Report dated February 15, 2008, worker inefficiency increases by" **[redacted]**"

Q. What are typical hourly costs for employees of the major contractors?

A. Vantage utilized data from the Kiewit and Alstom contracts and from CM analysis to develop hourly rates for use in our cost calculations.

KIEWIT HOURLY RATES

The KCP&L CM team, in an analysis of potential compression claims, (Schedule WPD-14), used a rate of "**[redacted]**" for Kiewit claims. Vantage found this number to be high, so we analyzed the data ourselves to understand

the support for it. It appears that the CM team used the total costs of labor, materials, indirects and fees from the original contract and divided that by the original estimated number of hours to reach a cost of "**[redacted]**" per hour. Vantage believes that for calculating inefficiency, we should not include the cost of materials. Therefore, our analysis resulted in an hourly rate of "**[redacted]**". This constitutes a base labor rate of $83.54 per hour plus indirects and fees.

ALSTOM HOURLY RATES

The Alstom rates were calculated using the rate schedule on pages V-1 and 2 and Article 13.6 of the contract. (Schedule WPD-31[38])"**

[redacted]**"

TURBINE/GENERATOR BUILDING BUST

Q. In the Schiff Harden December 12, 2006 status report[39] on page 6 thru 8, "**[redacted]

[redacted]

[redacted]**"

[38] /Only Opening sections and sections that refer to the analysis in the testimony are included in the Exhibit.

[39] See Schedule WPD-20 which includes the 10/17/06, pg 1, 11/1/06 pg.11, 12/7/06 pg. 6-8, and 12/12/06 p8-8, and pg. 16 Schiff Harden Reports as well as pictures of de-aerator.

What was the reason for the large, unanticipated increase in turbine building structural steel?

A. During development of the scaled up project between the 2004 PDR and the Scale-up estimate in January 2006, KCP&L decided to add a de-aerator in order to improve operability of the unit. The estimated cost for this enhancement was approximately $12M[40]. However, unlike Iatan Unit 1 which has a boiler drum upon which the de-aerator is mounted, once the decision was made to build Unit 2 as a supercritical unit, there was no boiler drum. B&McD, Alstom and or Toshiba ultimately decided to locate the de-aerator between the turbine generator and the boiler building. This had the effect of increasing the size of the turbine building significantly resulting in the increase in structural steel and other commodities. It was first realized when original estimates, upon which Scale-up budget as based, called for 2,700 tons of structural steel. Instead the bids came in with a requirement of 5,100 tons of steel. It is not clear why no one from B&McD, KCP&L, or Schiff Hardin realized that there would be a significant increase in cost beyond that of the de-aerator itself. Instead, in late-2006, at a time when the Control Budget Estimate (Schedule was August 1, 2006) was scheduled for completion, the project discovered it had what they referred to as "the turbine building bust."

Q. Did KCP&L and its project team attempt to find out what the cost of the bust was?

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[40] / See Scale-up PDR, for details.

A. Schiff Hardin requested an estimate from B&McD. Originally, B&McD provided an estimate of $106 million. Later, B&McD provided a set of "buckets" totaling to $106 million that did not provide a useful answer to the question.

Q. Does Vantage have any estimate of all costs associated with the larger turbine/generator building?

A. No, while the $106 M is provided with various breakdowns, there are a number of associated costs that do not appear to have been included. Based on a review of the Schiff Hardin reports, the total additional costs for the larger turbine/ generator building does not include incremental costs associated with the following.

Concrete foundations.

Concrete slab.

Roofing.

Siding.

Insulation.

Painting

Floor grading.

High energy piping extensions due to further distance from the boiler.

Small bore piping increases.

Electrical raceway.

Electrical power cables.

Electrical control cables.

Electrical instrument cables.

Lighting.

HVAC.

What we can conclude is the following. Someone from KCP&L approved adding a $12 million de-aerator, but did not anticipate the other associated costs as detailed above. B&McD apparently had its engineers increase the size of the building, but did not notify its budget group of the major change. KCP&L appeared to be ignorant of the entire issue until Schiff Hardin reported the problem. Then B&McD tried to obfuscate the total costs and never did provide an estimate that detailed the real cost of this bust. The $106 million they did initially provide to Schiff Hardin is likely very low. This issue was responsible, to some degree for the large increase project cost between early 2006 and the final CBE cost.

Q. Do you believe this issue was managed appropriately and that the costs were prudently incurred?

A. No. Apparently an unidentified KCP&L employee made a decision to add the de-aerator without knowing the unintended consequences. Neither KCP&L or B&McD were even aware of the change in scope caused by this project until the steel fabricators began to develop quotes for the required steel. These costs

would be deemed imprudent under any definition used. Later in my testimony, I isolate these costs and include them in my disallowance estimate.

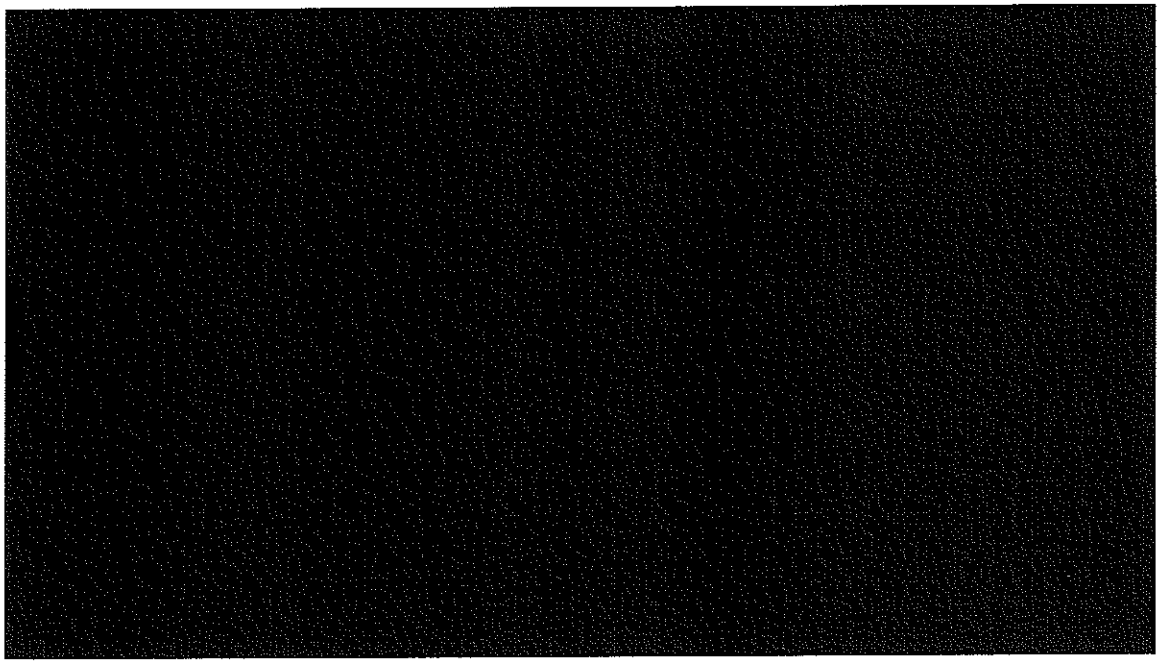
Q. Can you estimate the likely cost of the entire turbine building bust?

A. I certainly cannot, and it appears KCP&L and Schiff Hardin were unable to get a believable answer from B&McD. However, given the list of areas not quantified and the increase in balance of plant expenditure on this project, I would not hesitate to suggest that the total cost was over $200 million.

WORKFORCE CONGESTION SITE COSTS

Q. What are the impacts, to a project like Iatan, of the poor decisions and mismanagement identified above?

A. The delays of critical path work on the project resulted in a bow wave of required work hours that result in compression of work, congestion in work locations, increased requirements for infrastructure, and the need to hire employees with marginal skills. Had work activities been performed as originally planned, staffing levels on the project would have been significantly lower than they ultimately were resulting in lower costs and more efficient scheduling. The following graph portrays the number of construction employees on the project from 2007 to the end of 2009. The result of the increased work force has many ramifications."**



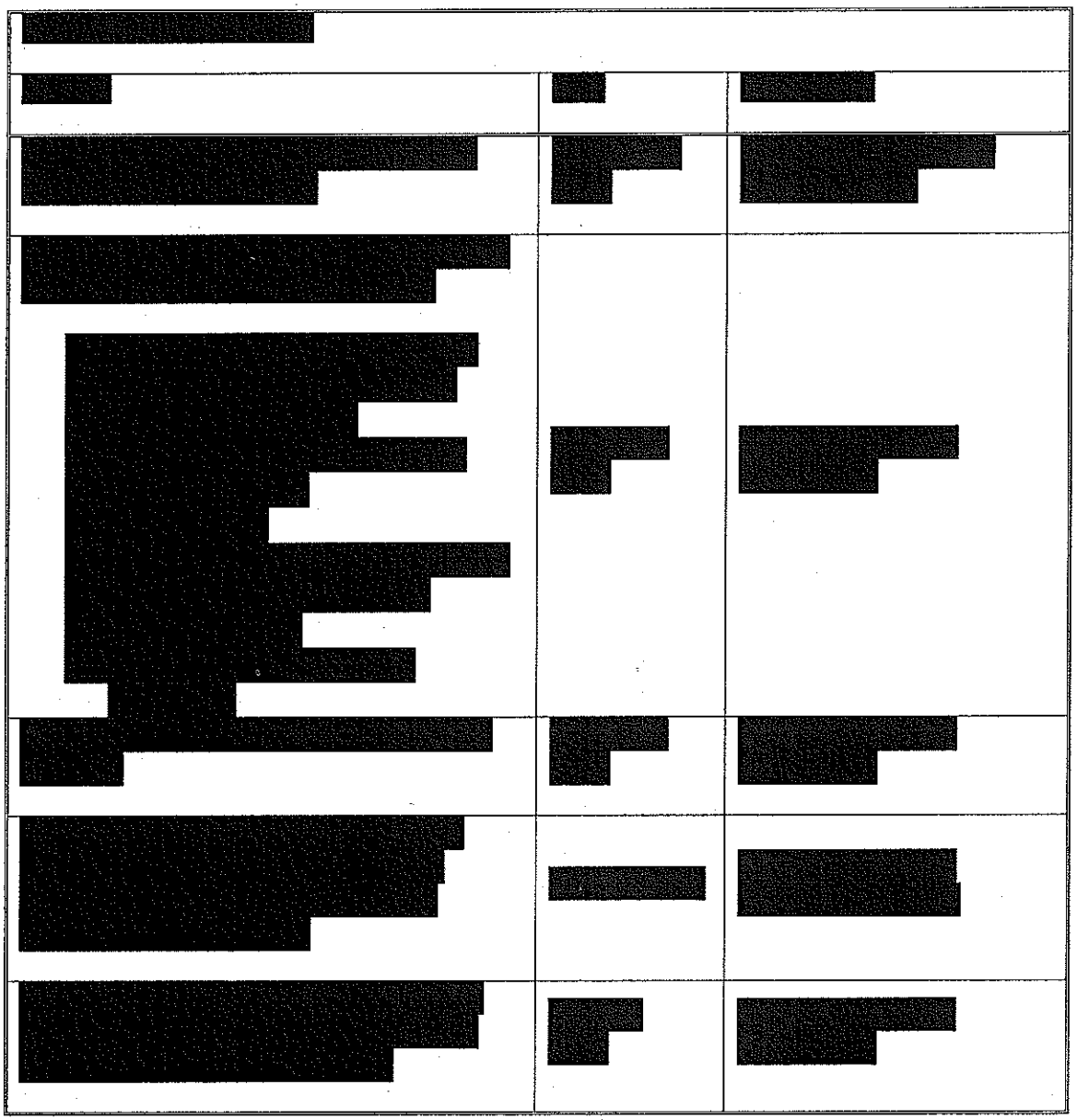
**"

ALSTOM CONTRACT ANALYSIS

Q. Please explain the basis for the Alstom contract and indicate whether all of the costs associated with it should be included in the allowed rate base.

A. "**

[redacted]



[redacted]

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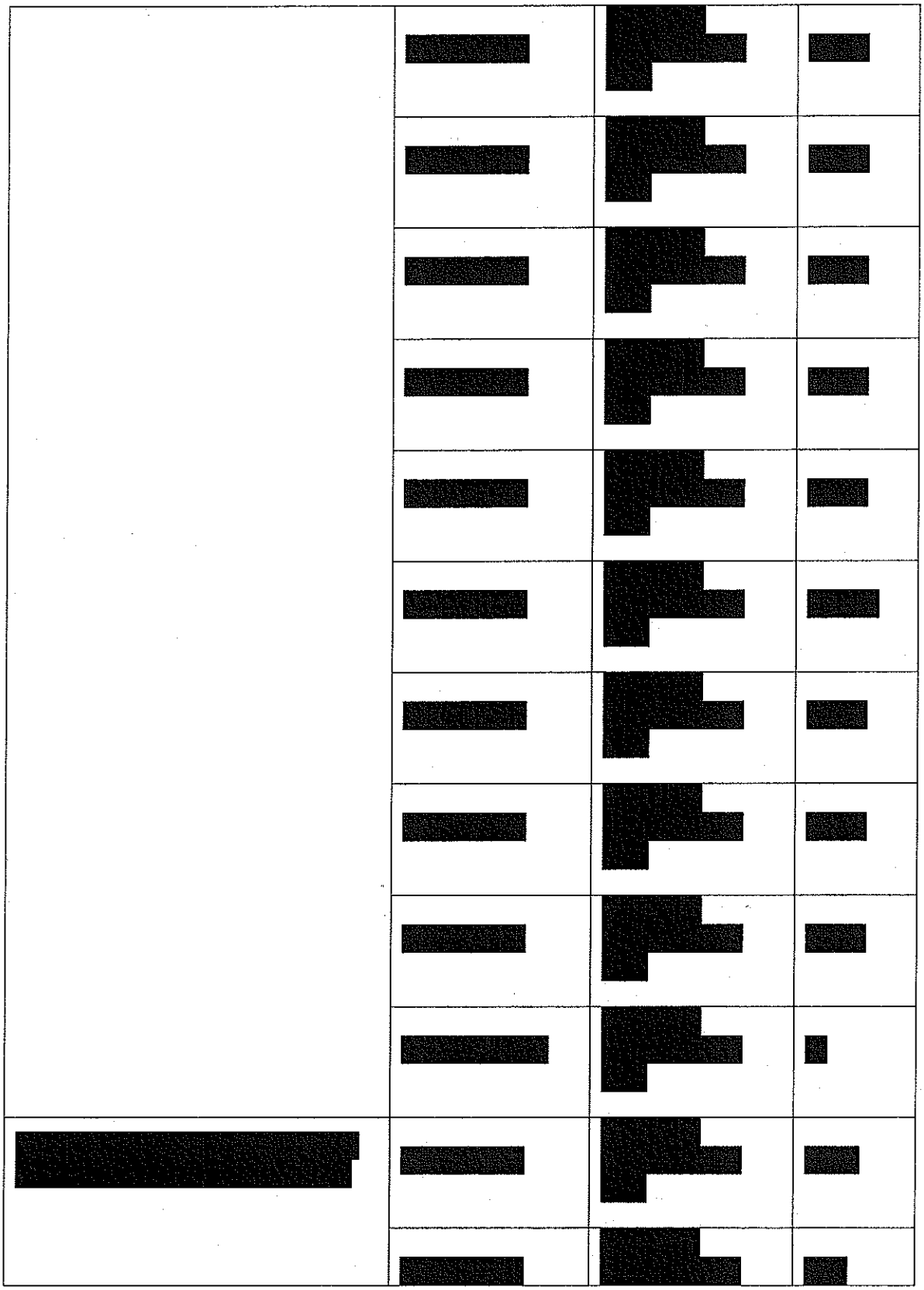
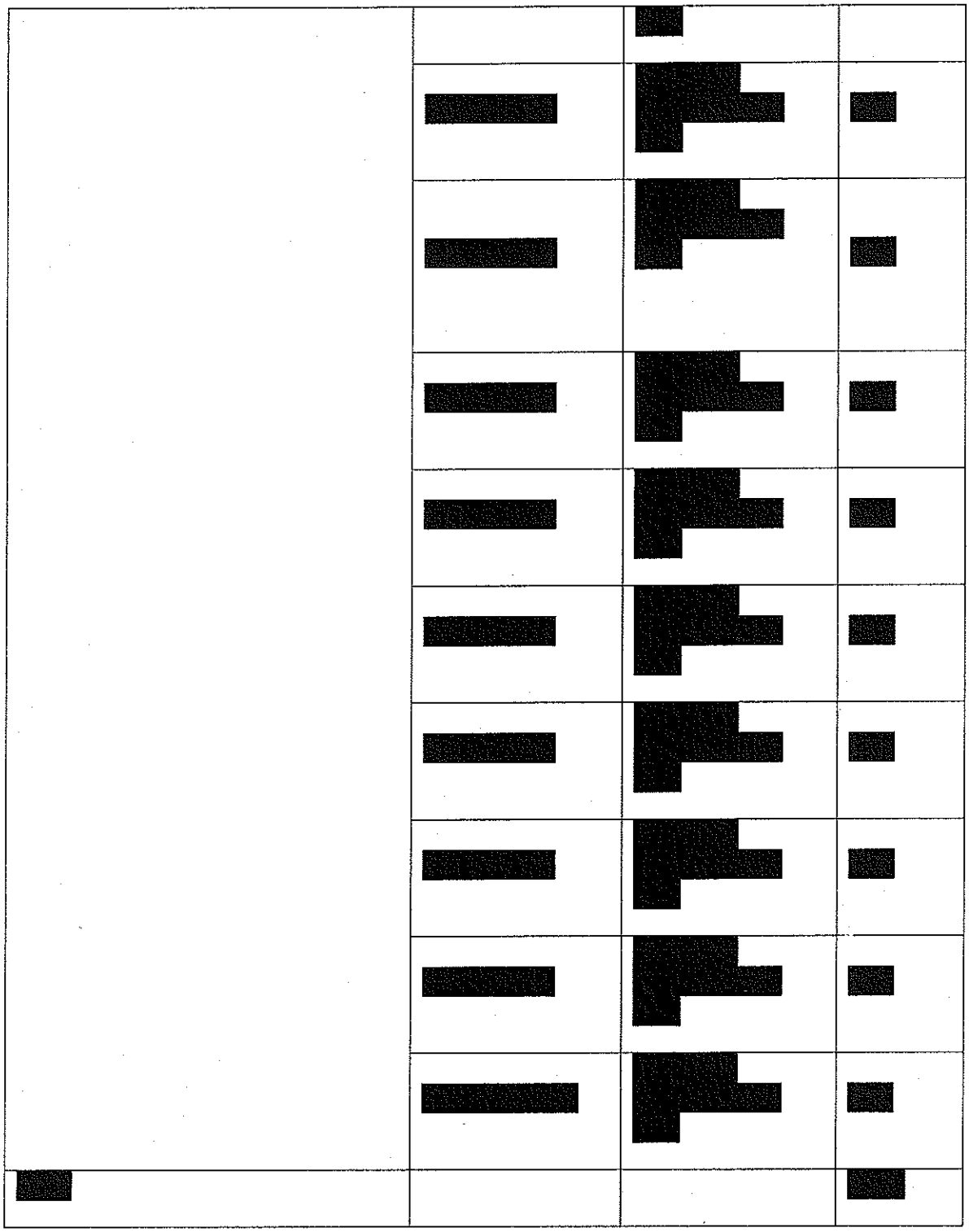
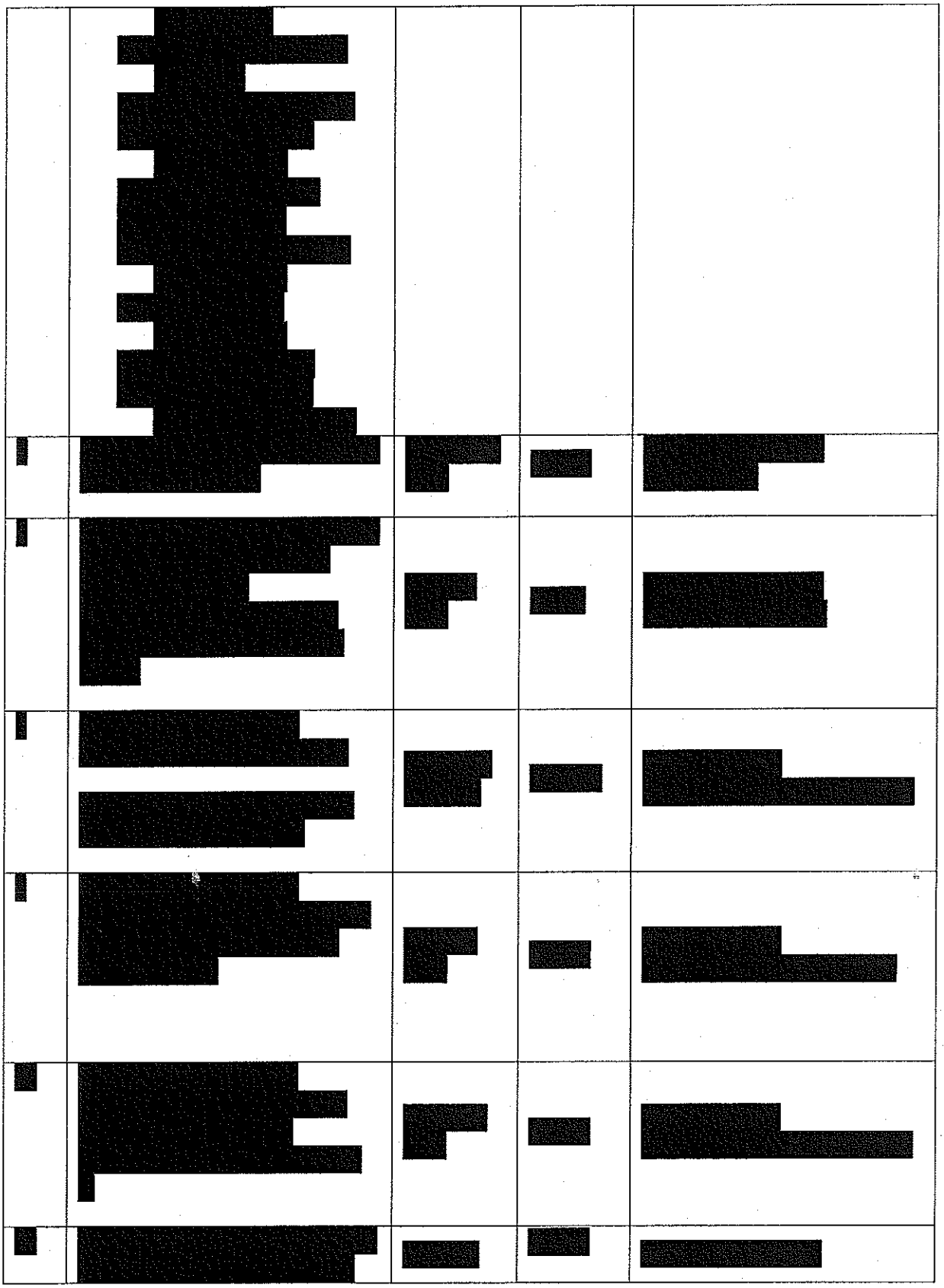
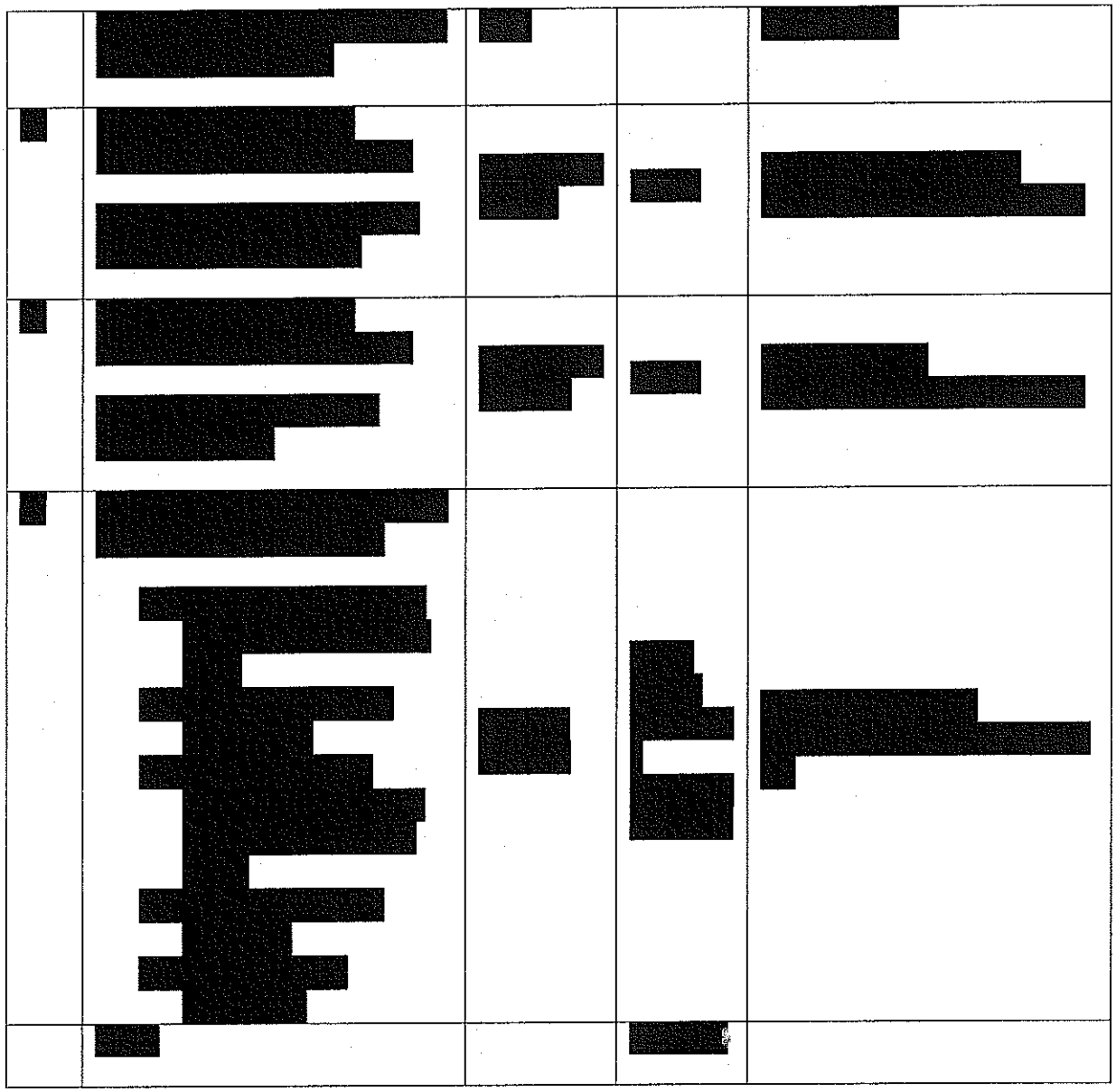


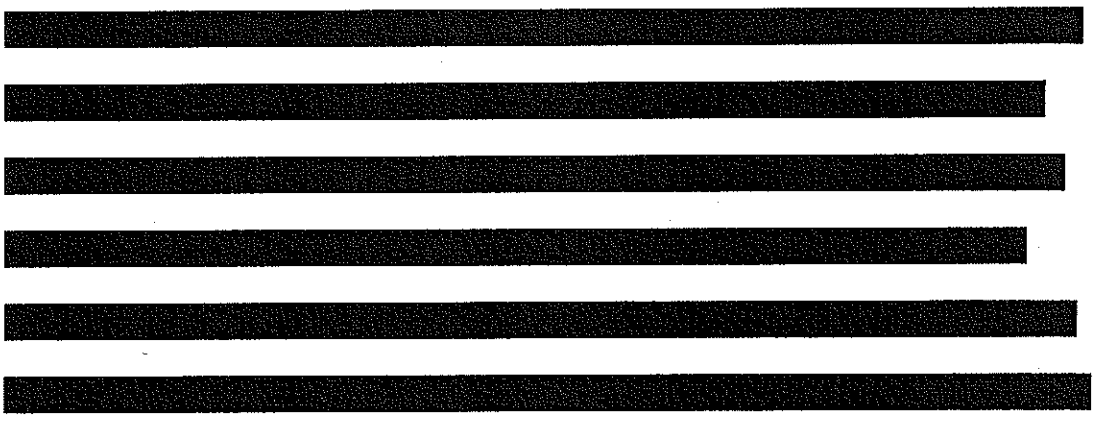


[redacted]

41/ Exhibit WPD-32, Alstom Settlement Agreement.



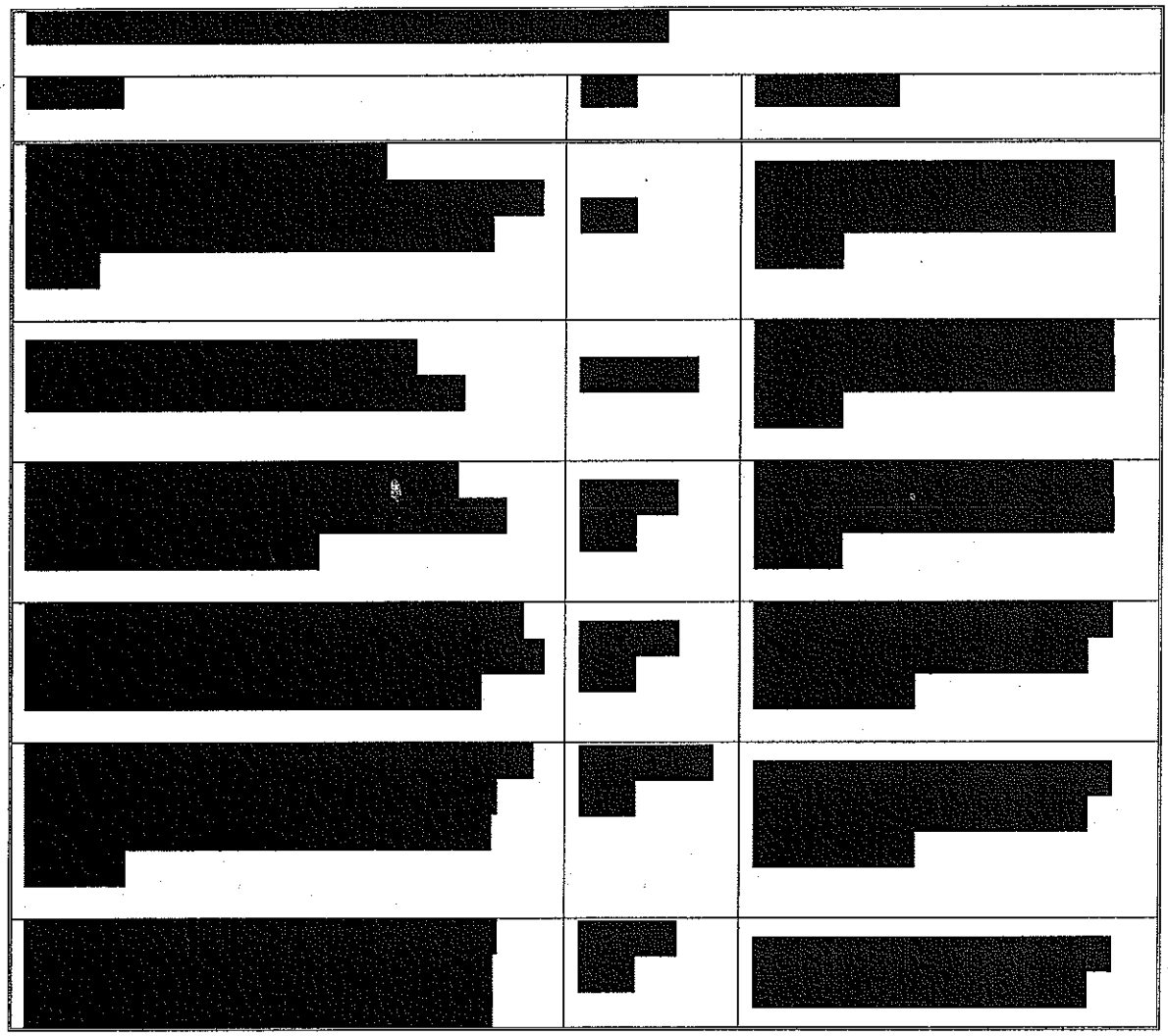




[redacted] **"

BURNS & MCDONNELL CONTRACT ANALYSIS

The time line and analysis of the of the B&McD contract portray the major cost issues associated with the contract. "**



[redacted]

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