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Confidential Memo

To: Jacob Maroga

From: Susan Olsen

CC: File

Date: 7/19/2007

Re: Issues for Today's Meeting Regarding Generation Primary Energy

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At the request of Dr. William Leininger and in order to make our meeting as fruitful as time will allow, I have taken the liberty of preparing a snapshot of Eskom's Generation Primary Energy (GPE). This snapshot was taken through the lens of 30 years of experience in the U.S. and international coal industries. Based on those 30 years, I will present my professional opinion of how and why the history of GPE has led to its current crisis situation.

To summarize, GPE lacks experience in and knowledge of the coal industry in general and South Africa in particular and the impact of coal quality on power station performance and reliability.

Note that I make a distinction between coal industry and coal mining experience. The coal industry is comprised of the entire value chain from resource development to production and sales to the end use of the coal, be it thermal or metallurgical. Coal mining, on the other hand, is nothing more than materials' handling.

When one considers that Eskom only has ten coal-fired stations, eight of which have tied collieries, one must ask:

- Why are the two stations without long-term contracts – Camden and Majuba – no closer to long-term supplies than they were seven years ago when Eskom released Ingwe from its obligations at Majuba and earlier with regard to Ingwe's obligations at Usutu?
- Why have the existing eight contracts not been renegotiated to meet burn requirements?

- Most importantly, one must ask how did GPE fail to see – much less solve - the existing supply crisis?

The hard truth is that until very recently, GPE's staff of mining engineers, geologists and other technicians never had to compete with domestic industrial demand or consider the implications of the international coal market on its ability to secure coal. Unfortunately, GPE is unequipped for the challenges.

Background

GPE grew alongside the South African coal mining industry, each very much dependent early on upon the other. Two and three decades ago, Eskom simply tendered for coal to be supplied to planned power stations and received responses from mining houses to supply that coal. Rather than dictate the terms of long-term coal supply agreements to suit the technical and commercial requirements of a 25 to 30-year generating station life, Eskom allowed the mining houses to write mine financing documents that suited their capital and return requirements.

Known as "cost-plus" contracts, these mine financing documents assured that the mining houses recovered 100 percent of their capital investment as well as a healthy return on that investment during and post that recovery. For reasons unknown, however, few of these documents required performance on the part of the mining houses to deliver coal of the quality for which the associated plants were designed. Nor did these documents make ;provisions to fuel stations at 100 percent load if the station was so required. More troubling is that GPE has historically and consistently failed to enforce what little performance the contracts required.

Current Situation

Following the end of apartheid (when countries could legally buy and import South African coal), some of the mining houses discovered coal of export qualities in the reserves of the tied collieries. When their capital investment was repaid, they asked GPE to convert some of these cost-plus agreements to so-called "fixed price" contracts in which the mining houses pledged to meet their contractual requirements to GPE at low prices "fixed" for the remaining - or in some cases renegotiated - contract terms. Sounds good until the mining houses, purposefully or not, focused on meeting export qualities and tonnages at the expense of GPE quality and tonnage. Optimum, Grootegeluk and Douglas/Middleburg are cases in point.

GPE has stated that these documents have historically produced the lowest cost coal in its purchasing portfolio as GPE has had "full say" over how and when these mines produce. Looking backward from today, the 70-odd Rand per ton prices these mines produce look pretty good compared to what replacement costs will be incurred by new mines. Looking in the mirror, the 70-odd Rand per ton prices these mines produce also look pretty good

compared to the spot purchases GPE has been making to fill the gaps between cost-plus and fixed-price contract ceilings and current and future station burn requirements.

But make no mistake, the cost to construct new mines in South Africa will vary little from the cost to construct a new mine any where else in the world. With that same world beating a path to South Africa for thermal and metallurgical coal, there is very little incentive for mining houses to invest capital at today's rates into old mines selling at yesterday's prices.

GPE's failure to demand at least minimum performance from its existing contracts has resulted in mining houses supplying at best on the margin, at worst in breach; in either case, with seeming impunity

An exception is Kendal's Khutala Colliery which actually could produce more than its contractual ceiling; unfortunately, GPE has failed to follow through with negotiations to set a price for such incremental tonnage. But for Khutala, GPE's portfolio of long-term coal supply agreements is failing to meet the generating fleet's requirements. In direst straights are Tutuka's New Denmark colliery where the mine is in incapable of producing at its contractual level and Majuba with its absence of any dedicated, long-term supply.

The Current and Future Crises

From approximately the last five years, Eskom's fleet of aging plant has been required to operate at capacity and availability rates rarely – if ever – experienced by comparably sized coal-fired utilities. To be fair, the cost-plus coal contracts written by the mining houses were not designed or written to produce coal tonnages for near 100 % load factors; nor did those converted to "fixed price" contracts. That notwithstanding, growing electricity demand did not happen overnight. Shortages, quality and quantity performance failures did not happen overnight. But GPE, charged with keeping its fingers on the pulse of the stations and assuring that sufficient coal would be available, failed to respond accordingly.

First, as the existing fleet was designed to burn the coal produced by its tied collieries, it would seem logical to ensure that the design coal was available in quantities sufficient to meet demand. Contract renegotiations are normal in the coal industry and while they may take time to complete, they could certainly have been concluded in a timely fashion. Granted, the price for such incremental tonnage would most likely be higher in order for the mining house to recover the costs of any new capital investment.

It does not appear, however, that GPE performed any cost benefit analyses to quantify the long-term value of using design coal versus possible price increase from such renegotiations. Nor does it appear that any cost-benefit analyses were performed to quantify those possible price increases versus the long-term cost of using poorer-quality spot purchases almost all of which have been at prices in excess of existing tied colliery contracts.

Already lacking a plan for securing supplies for new build stations, GPE now states it is "desperate" and is buying coal on the short term market at elevated prices and of lesser

qualities to meet with gaps between its long-term tied colliery contracts and system-wide station burn requirements. GPE is "concerned" that it has lost control of the coal "market" and is effectively at its mercy. Without radical changes, it will remain so.

Areas of Concern

I have taken the liberty of listing areas of concerns a separate bullet items though they are inextricably linked one to the other. I have also offered a couple of examples of existing GPE practices/policies and their potential consequences.

- ✓ GPE's lack of experience in and failure to grasp the basics of commercial negotiations results in unnecessarily drawn out timeframes and unrealistic expectations. For example, discussions regarding the proposed supply of coal from BHP's Leandra resources have been going on for nearly three years with no end in sight. Discussions regarding the proposed supply of coal from Anglo's New Largo resource have been going on for nearly five years. Both will use their international investment criteria placing their limited investment capital where it can earn the greatest return. BHP fields a permanent commercial negotiating team of three people; Anglo, the same. GPE fields an ever-changing, inexperienced team of up to 15 drawn from assorted disciplines that asks the mining houses to table the draft agreements and associated prices. Why would GPE field a team any less experienced or prepared than those of the mining houses and why would GPE not insist on controlling the documents? It is and has been a recipe for consistent failure.
- ✓ GPE's lack of experience and understanding of world's best practice results in unfavorable and unsustainable contract provisions. Two decades ago, GPE accepted outright the premise stated by mining houses that "geological risk" was for Eskom's account. In the world, "geological risk" is nothing more than either force majeure or the ultimate manifestation of incomplete, at worst fraudulent, reserve identification. Tutuka's New Denmark Mine is a classic example of neither GPE nor Anglo fully identifying the reserve and mining conditions. Worse, rather than renegotiate the agreement to match the commercial terms to the reality of a failed mine plan, the coal supply manager says it's "cheaper to just leave it alone." Abandonment of Majuba Colliery is another example of Eskom picking up the tab for what appears to have been force Majeure cloaked as "geologic risk."
- ✓ GPE purchases coal under un-signed contracts stating that it can rely on "precedents" to ensure performance; however, GPE allows mining houses in possession of those unsigned agreements to hold it hostage to payment for under-performance.
- ✓ GPE's failure to enforce the quantity provisions of existing coal supply agreements has resulted in an unstructured, undisciplined and opaque program of buying to make up the gaps between contract ceilings and actual production. This same

unstructured program of buying is used to make up the difference between burn requirements and actual production. By so doing, GPE of its own volition gave up control of the market but scratches its head when faced with dramatically elevated prices.

- GPE's failure to enforce the quality provisions of existing coal supply agreements has resulted in damage to generating plant ranging from simple de-rating to boiler tube leaks. GPE believes that delivered coal qualities are a function of what "God has put in the ground" and variations cannot be helped. Listening to mining houses, it even developed a contract quality specification that allows mining houses to add contaminate. GPE allows mining houses to deliver effluent from preparation plants because it has failed to define coal in accordance with a specific set and range of qualities.

- GPE's lack of understanding of the impacts of poor quality control extends to its short-term coal sourcing and results in concluding short-term contracts for less than optimal coals, albeit it acceptable prices. Majuba Power Station receives coal from more than a dozen sources, very little of which even remotely resembles its design coal. It is only to the credit of Majuba Power Station's operating people that the station remains available despite the widely fluctuating and mostly unknown qualities of coal it receives on any given day. No wonder Scottish Power hired two of Majuba's shifts and moved them en mass to Scotland.

- GPE has no ability to audit and or track a ton of coal from any mine from which it is produced to the boiler in which it is fired. Aside from being unable to determine the true cost of electricity at any station's busbar, GPE cannot on any given day determine how much coal it has received, stockpiled or burned. For example,

  - 80,000 tons of coal at Arnot "went missing", was written off through a journal entry, no investigation was undertaken and no one was held accountable;
  - 278,000 tons of coal at Kriel "went missing", a report on factors contributing to variances simply states "*Recording and checking of transferred coal*"; no one has been held accountable.

  Under the supervision of GPE "coal supply managers":

  - Optimum Mine has become incapable of meeting its contractual quality, quantity and price provisions;
  - Douglas/Middleburg Mine has become incapable of meeting its contractual quality, quantity and price provisions;

- GPE routinely fails to notify tied collieries of coal requirements within the contractually specified notice periods leaving itself open for mining houses refusing to comply with requirements;

- GPE fails to audit Life of Mine Plans for cost-plus tied collieries leaving GPE's "budgeting" process at the mercy of mining house accurancy;

- ✓ GPE's agreements for the road transport of coal permit up to a 2% variance in tonnage between loaded and delivered weights; applied to half of the 9 million tons going to Majuba and using R 70/ton, that equals R 6,300,000 Eskom could pay for non-delivered coal;
- ✓ GPE's insistence upon "silos" has resulted in no single interface point between it and mining houses and has led to situations in which mining houses and GPE routinely giving and receiving mixed and even wrong information. Further, these silos allow staff to function free from oversight or interference;
- ✓ GPE's coal sourcing manager has no day to day contract with staff charged with long or short term coal procurement, has not attended an entire negotiating session or read any draft agreements despite claiming he has no "more important responsibility";
- ✓ GPE's separating quality control programs from contract management has resulted in ex parte quality agreements/arrangements outside of contractual provisions.
- ✓ At recent emergency meeting, GPE management and selected team members met to develop a plan to "recapture" the coal market from the mining houses and return it to GPE; the result was a list of 33 "action items" ranging from signing a contract for the supply of coal from the Usutu reserves by the first week of July despite the fact that the mining rights are in legal limbo to "right-sizing" Project Bravo from 5,000 MW to 3,900 MW; only 4 of the 33 actions were assigned to staff for completion; of those 4 only 2 had target deadlines;
- ✓ Project Alpha and Charlie's coal supply agreements are commercially not viable;
- ✓ Project Bravo's target coal source is, according to the mining house, not "remotely close to being at a measured status";
- ✓ GPE is not leading negotiations for the coal supply agreement for Mmamabula;
- ✓ A potential coal resource located 1.5 km from Camden Power Station was told it would not be allowed to gain any "economic rent from its proximity" and GPE would rather rely on remote sources despite the fact that the delivered price of either would be indistinguishable;
- ✓ Three coal supply agreements for Return to Service stations negotiated by properly mandated teams were set aside as a function of personality conflict; while GPE's "coal supply managers" reserve the right to overturn short term coal supply agreements negotiated in good faith by the managers of short term sourcing. Both actions reinforce the perception by the coal industry that GPE's word has no value;
- ✓ Mandates delineating acceptable "real" prices were relied upon on a selective basis to be viewed only as "guidelines" as the information on which they were based was incomplete and possibly "flawed;"
- ✓ Restructuring of the coal and gas supply team routinely scatters negotiating teams and leaves mining houses facing new teams on a regular basis; and,

- ✓ Lack of leadership and direction, combined with changing roles and responsibilities; has resulted in the loss of all but one coal-sourcing staff member.

Conclusion

In my professional opinion, GPE as it is structured and managed cannot meet current needs much less future requirements. GPE lacks leadership, experience, knowledge and direction. It is hemorrhaging talented staff and is left with those who have delivered it to its current condition.

Without intervention and an imperative to become a fuel procurement and management department worthy of Eskom's world-class operating plant, without appointment of a commercial competent managing director supported temporarily by external exports, I predict that GPE will collapse under its own weight.

The good news is that GPE can be fixed and made into a viable, world's best practice fuel procurement department in (I believe) not more than 18 months. Of course, the MD must be given sufficient authority and discretion. The bad news is that change is always hard and uncomfortable and the solution will require the relocation/redeployment of certain Eskom employees and dismissal of certain consultants.

In any event, I believe the choice is clear and the reasons for it compelling.