

676760  
Bullmoose Mine  
093 P001

**8th Annual Minerals North Conference  
Proceedings**

**Tumbler Ridge,  
British Columbia**

**April 17 - 20, 1996**

**"Mining in Today's Environment"**

*Co-Sponsored by:  
District of Tumbler Ridge  
&  
Ministry of Small Business Tourism & Culture*

Presentation by Rob Scott, Quintette Operating Corporation, cont'

A review of the potential reserve areas concluded that the Babcock deposit offered the best opportunity due to the relatively simple geological structure and proximity of 6° to 8° into Babcock Mountain with minimal faulting. Interburden spacing allows for the application of large cable shovels. Dilution and recovery are expected to be improved over existing deposits and result in lower processing costs.

### ***Production Rate***

Clean coal production rate determination for the post 1998 period required the balancing of several competing factors:

1. Fixed Costs - Overhead, insurance, and tax costs tend to be fixed and, therefore, higher throughput rates reduce unit operating costs.
2. Infrastructure - Rail and port will require a certain level of throughput to continue to serve Northeast coal.
3. Mine equipment costs - Maximizing the proportion of total material moved by the lowest unit cost mining equipment results in a reduction of clean coal production.
4. Congestion - Reductions in congestion result in lower production rates that are partially offset by higher mine productivity and resulting lower unit mining costs.

These competing factors require balancing to optimize production costs in an intensively competitive industry with relatively thin operating margins. The result was establishing a base production rate of 3 million tonnes per year for the post 1998 period with upside potential should market conditions and operating experience in simpler geological conditions suggest higher production rates. Rail and port contracts and particularly throughput penalties will require renegotiation to ensure Northeast coal's competitive position can be achieved in the post 1998 market place.

### ***Summary/Conclusion***

In summary, Quintette's operating history, bankruptcy, restructuring and subsequent cost reduction initiatives were necessary elements in moving Quintette to a competitive market position upon completion of the long term contracts. The operating experience acquired in complex coal mining has allowed Quintette to modify mine plans, optimize production rates, and enter a competitive market place in the future.

## **The Bullmoose Mine: An Overview and Look at the Future**

***Presentation by: Jack Tuomi,  
Mine Manager, Bullmoose Operating Corporation***

Bullmoose Operating Corporation is a joint venture owned 61% by Teck Corporation of Vancouver, 29% by Rio Algom of Toronto, and 10% of Nissho Iwai of Tokyo. Tech Corporation is the operator of the joint venture.

Bullmoose Operating Corporation developed the South Fork Deposit in the early 1980's to provide metallurgical coal to meet the obligations of a 15 year contract signed with the Japanese Steel Industry. The contract requires the delivery of 1.7 million tonnes per year plus or minus 5% and expires on March 31, 1999. The JSI has elected to take - 5% or 1.6 million tonnes per year for the past several years. In addition, Bullmoose has since 1993 supplied 400,000 tonnes per year for the Quintette contract bringing the total current annual production up to 2 million tonnes.

Presentation by Jack Tuomi, Bullmoose Operating Corporation, cont'

The mine development cost \$275 million and included a 2.3 million tonne per year washplant, shops, warehouse, office building, pit equipment, and housing for employees. Coal production commenced in late 1983 and the first ship was loaded at Ridley Island in Prince Rupert on January 10, 1984. By the end of 1995 over 21 million tonnes of coal has been produced.

Employment at the mine currently totals 409 and Arrow Transportation, the firm which hauls the coal from the mine to the rail head employs an additional 37 people.

### *Geology*

The Bullmoose Mine is located 30 kilometres west of Tumbler Ridge and includes two deposits, South Fork and West Fork. South Fork is the current mining area and West Fork is undeveloped.

The South Fork deposit consists of six seams over an 80 metre sequence, labelled All, A2, B,C,D, and E Seams. The seams are divided into two plant feed groups with the lower seams All, A2 and B designated as Type 1 coal while the upper seams, C,D and E are designated as Type 11 coal. The Type 1 seams are lower in ash compared to the Type 11 seams and so the two types of coal are blended to give a consistent feed ash to the plant.

B Seam is by far the thickest seam at 5 meters while all the remaining five seams are less than two meters thick. Mining of such thin seams must be done with great care to avoid coal losses.

The South Fork syncline structure dips 5 degrees in the north and up to 65 degrees at the southern extent. The syncline structure is quite simple and is interrupted by only two fault zones which are roughly parallel to the main fold axis.

All of the seams are medium volatile bituminous coal with volatile matter values ranging from 25 to 33%. The Type 1 coal seams have insitu ashes of less than 20% while all the Type 11 coal seams have ash values of 20 to 40%. Sulfur values are low averaging less than 0.4%.

### *Pit*

The major mining equipment in the pit includes:

- 4 - P&H 2100 shovels
- 1 - Marion Backhoe
- 1 - P&H 1550 backhoe
- 2 - Cat 994 loaders
- 2 - Cat 992 loaders
- 3 - Ingersoll Rand DMH drills
- 1 - Gardner Denver GD70 drill
- 3 - Komatsu trucks
- 3 - Cat 785 trucks
- 11 - Cat 789 trucks
- 9 - D9 & D10 dozers
- 2 - graders
- 2 - Rubber tired dozers
- 3 - scrapers

In 1996, 17 million bank cubic meters or 42 million metric tonnes of waste rock and coal will be mined from South Fork. The mining methods employed at Bullmoose vary with the steepness of the coal.

Presentation by Jack Tuomi, Bullmoose Operating Corporation, cont'

Over 60,000 tree seedlings have been planted to date on reclaimed areas. Only 200 hectares of the remaining 296 hectares will have to be reclaimed as the final A1 footwall slope will be a sheer rock face and will not be reclaimed.

### *Past Successes*

Bullmoose Operating Corporation has been a consistent and profitable metallurgical coal supplier for 12 years now. 21 million tonnes of coal have been exported to Japan bringing export revenue into Canada of close to 2 billion dollars. The mine has provided stable employment for over 40 people directly at the mine without layoffs or strikes. In addition hundreds of additional jobs have been provided by the transportation companies and suppliers to the mine. What lies ahead for Bullmoose?

### *The Future*

With the end of the coal contracts at Bullmoose and Quintette in site the question naturally arises regarding the prospects beyond the contracts. At Bullmoose we currently receive a premium of about \$19 Canadian per tonne more than the world price of metallurgical coal. We expect that the price we receive will drop to whatever the world market price is on April 1, 1999. To compete at world prices we can "hope" that world prices increase significantly over the next three years or we can control and reduce operating cost. Since market prices are unlikely to rise to our current prices this leaves the cost reduction alternative. Mine site operating costs at Bullmoose have been well controlled over the years. The rise during 1995 was due to high repair costs on the shovel fleet and due to significantly longer haul distances. Capital expenditures of 30 million dollars on new mine equipment over the last three years will help us control mine site costs even though the stripping requirements will be at an all time high over the next three years. Stripping requirements beyond 1999 will reduce significantly which should translate into reduced operating costs.

Transportation costs actually account for a larger portion of the direct cost to the mine than all mine site costs combined. In addition transportation costs have risen steadily over the year. In order for Bullmoose to continue mining in the South Fork deposit to the exhaustion of the coal reserves in 2003 transportation costs will have to come down considerably.

Beyond the South Fork deposit there still remains the West Fork deposit which is only about two kilometres from the plant site. West Fork contains in the order of nine year of metallurgical coal reserves at 1.6 million tonnes per year. In addition there are significant reserves of thermal coal available in West Fork. To develop West Fork, capital would have to be invested in a new breaker, conveyor and pit development. A decision on whether or not to invest in West Fork would not be made until after the expiration of the current coal contract and that investment would certainly be dependent on the coal prices in effect at that time and mining and transportation costs.

In conclusion I would again like to stress that Bullmoose has been a steady, reliable and profitable producer for 12 years but to continue producing beyond the coal contract which ends in 1999 operating costs will have to be reduced, particularly for transportation. I am optimistic that this can be done and I certainly expect Bullmoose to continue operating at least until the year 2003 and possibly well beyond that should the West Fork deposit be developed.