

**\*\*\* Confidential\*\*\***

**MINUTES OF MEETING - FEBRUARY 29, 1996**  
**INFORMATION MEETING - SULPHUR DIOXIDE EMISSIONS - GIANT**

**In Attendance:**

**Sadek El-Alfy - Vice President Operations: Royal Oak**

**John Stard - Mine Manager: Giant**

**Phil MacIntyre - Mill Superintendent: Giant**

**Erik Madsen - Environmental Superintendent: Giant**

**Joe Handley - Deputy Minister: Renewable Resources**

**Graham Nicholls - Deputy Minister: Energy, Mines & Petroleum**

**Emery Paquin - Director: Environment Protection Division**

**Jim Sparling - Air Quality Specialist: Environment Protection Division**

**Mike Cunningham - Director: Energy, Mines & Petroleum**

A meeting was requested by the two GNWT Departments to meet with Royal Oak representatives in order to obtain an update on where Royal Oak stood on the issue of sulphur dioxide emissions. As well, the GNWT wanted to provide Royal Oak with an update on "draft" regulations they were preparing.

Joe Handley stated that the public and other interest groups want something to be done about emissions. He indicated that this has been a heated issue over the last few years. Renewable Resources are looking at coming out with "draft" regulations for sulphur dioxide emissions in the near future. The GNWT wants to work with Royal Oak to ensure that some action is undertaken to reduce levels, knowing that what ever is done will never please all parties involved.

Sadek El-Alfy outlined the current situation at the Giant Mine. Basically have 3 -5 year life remaining. Explained that Royal Oak was presently undertaking an aggressive exploration program not only on site but in the surrounding areas of Yellowknife (ie Mirage Islands). It was indicated that Nicholas Lake may be brought into production as early as 1997/98.

The discussion of introducing an autoclave to the site was questioned. Sadek clearly stated that an autoclave is a large scale event, very costly, and that the current reserves cannot justify an autoclave. He did however indicate that should a "new - large" orebody be found, an autoclave would seriously be looked at.

The discussion then turned to the dispersion modelling work that had been jointly funded between Renewable Resources and Royal Oak. Jim Sparling then indicated from the model runs conducted that it appears that a stack between 275 - 300 feet will greatly reduce the ambient sulphur dioxide ground concentrations. This reduction also did not require extra heat nor increased blower fans. Therefore, the costs would basically be around \$1.5 million. It was indicated that these numbers came from the Dillon Mechanical Feasibility Report - Royal Oak commissioned.

Graham Nicholls questioned the numbers that Erik Madsen had earlier discussed with him, stating that they were in the range of \$4.0 million dollars. It was indicated by Erik Madsen that this cost was discussed prior to the final dispersion model runs being obtained. As well, the \$4 million was basically based on the worst case scenario. Which would be a 400 foot stack, larger fan blowers required as well increased temperature, requiring a heater, and annual propane costs.

Sadek then questioned the fact that Environment Canada was reviewing arsenic emissions and possibly developing regulations. He was concerned that Royal Oak would build a 275 foot stack which would be acceptable to the GNWT but not acceptable to Environment Canada. Explained we would rather want to shop at "one store" and ensure that we have pleased both parties.

Emery Paquin explained that they are working with Environment Canada and are receiving regular updates on where they stand with the arsenic issue. Supposedly they are going to release a report on arsenic by the end of March if all goes well.

Erik Madsen questioned that Environment Canada usually does not develop Regulations that are site specific to one area of Canada - they are usually nation wide. In this case, they are looking at Regulations that would be site specific to the roaster at the Giant Mine, something that should be applied Canada wide. Canada wide Regulations require consultation in every province and territory, which would take years to complete.

The discussion then turned to the "draft" regulations being developed by the GNWT. It was explained that once the draft is completed (whether it be weeks or months) that it will go out for consultation (other government agencies, industry, and public). Joe Handley made the comment that should the arsenic emission rate not be an issue that they would proclaim the sulphur dioxide regulation once the consultation process is over. They would then give Royal Oak a deadline - period of time to meet new Regulation.

Erik Madsen questioned as to what limits would be used in the "draft" regulation and what these limits were based on. Emery Paquin indicated that they feel that they have a good understanding on what the current levels are being released from the mass balance numbers they received from Royal Oak. Erik Madsen then mentioned that Royal Oak was looking at purchasing a continuous sulphur dioxide monitor.

Joe Handley indicated it would be nice to continue working with Royal Oak to prepare an action plan to reduce emissions. He stated that it is apparent that the public wants something done, it is also recognized that with current reserves an autoclave is out of the question. Turning to dispersion (raising of the stack or building a new stack) as the best option at the moment. Mike Cunningham questioned if this dispersion would be acceptable to the two O's (Chris O'Brien and Kevin O'Reilly). Joe Handley reiterated what he said earlier, whatever is done, it will never please everyone.

Sadek stated that Royal Oak will know the results of their extensive exploration program by mid 1997 and will have an idea if there is a "new ore body".

In the meantime Erik Madsen and Jim Sparling are to work together to clarify the costs required for the stack height increases in order to reduce ambient sulphur dioxide ground concentration levels. It appears that a height of between 275 - 300 feet will produce these reductions.

A handwritten signature in dark ink, appearing to read "Erik Madsen", written over a horizontal line.

Erik Madsen  
March 11, 1996