

MECHANICAL ENGINEERING STUDENT DESIGN PROJECT PROPOSAL

(Please return to Mechanical Engineering Department by August 13, 2010)

(i) Title: Jet Boring System Relocation Car Design

(ii) Background Information (Problem Description): Jet Boring is the mining method used at the Cameco Cigar Lake Mine in Northern Saskatchewan. The Jet Boring System (JBS) is a semi-mobile mining machine which uses a high pressure water jet to extract uranium ore. The JBS is made up of six cars hitched together in series which run along rails within a cross cut developed below the ore body. The JBS drills a pilot hole 50m up from the cross cut into the ore body and jets out the cavities creating an ore slurry which is piped to downstream processing equipment.

When the JBS has finished mining all the overhead ore accessible from the cross cut, it must be moved (car by car) to the next available cross cut to begin mining a new panel. In addition to moving from cross cut to cross cut, any individual JBS car may need to be moved to the underground mechanical shop for maintenance or repair.

(iii) Objective(s):

Design a relocation car capable of transporting individual JBS cars from one location in the mine to another in a safe and controlled manner. The car must be capable of meeting the following objectives:

- Capacity to carry approximately 16 Tonnes
- Self propelled under diesel power
- Ability to turn about its own central axis due to limited turning clearances within the mine
- Can be disassembled into components small enough to accommodate shaft clearances for conveyance underground
- Equipped with rails as to allow JBS to roll off of cross cut rails and onto relocation car rails

(iv) Designed Output:

The relocation car design output should provide the following deliverables:

- Interim stake holder review drawings / sketches throughout the design process
- Final design report
- Fabrication drawings
- Bill of materials including vendor part numbers
- Cost estimate

Proposed By: Devon Loehr

Date: August 11, 2010

Email Address: devon_loehr@cameco.com

Student Group Members

Company Name: Cameco Corporation

Company Address: 2121-11th St West

Saskatoon, SK S7M 1J3

**Ben Cloarec (Cameco), Justin Lewis,
Kyle Georget, Dave Pyra**