

## **APPENDIX III.6**

### **WINTER ROAD OPERATIONS**

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## **1.0 TIBBITT TO CONTWOYTO WINTER ROAD OPERATIONS**

Annual re-supply for the Snap Lake Diamond Project will be by truck over the Tibbitt to Contwoyto Winter Road (TCWR), which extends north from the end of the Ingraham Trail, near Yellowknife. The TCWR is managed under a Licence of Occupation by joint venture partners who operate mines in the region (Lupin, EKATI™, and Diavik). That Licence of Occupation expires in 2003. Therefore, in preparation for renewal of the permits, the joint venture partners have recently completed an assessment of the current and future operation of the road. That assessment is reported in a project description document that describes the operations to date, and anticipated future changes that will allow the road to meet predicted traffic demands (Winter Road Joint Venture 2001).

The following key features of the TCWR have contributed to its successful operation for development and yearly re-supply of other mines:

- operational experience has evolved with continuous improvements over twenty years of perennial use;
- traffic management practices allow high throughputs during a projected median annual period of operation of 78 days;
- the operation is governed by established road safety rules that are enforced by independent monitoring (Echo Bay 2000);
- an effective spill contingency plan is in place (Echo Bay 2001); and,
- ice operation practices, overland portage construction methods, and traffic management practices are under critical review and will be improved. These upgrades will improve traffic flow to meet cumulative future traffic projections that include the Snap Lake Diamond Project.

Management of the TCWR is the responsibility of a senior management committee formed by the joint venture partners. They receive input from an advisory committee on safety and environment. The safety and environment committee includes a De Beers Canada Mining Inc. (De Beers) representative. De Beers will have the option of becoming part of the winter road joint venture once permits are in place for the Snap Lake Diamond Project.

Road construction and operation are currently contracted by the joint venture to Nuna Logistics. They have a five-year contract that will expire in 2003. It is anticipated that reorganization of the joint venture will accompany renewal of the Licence of Occupation and that the reorganization will include greater direct input from Aboriginal groups that use the land and natural resources (Winter Road Joint Venture 2001). A 35 kilometre (km) long access road will be required each winter to connect the Snap Lake site to the

TCWR. The Snap Lake access road will connect to the TCWR at km 222 (km 0 of the winter road is Tibbitt Lake at the departure from the Ingraham Trail). The location is on an unnamed lake just south of Portage Bay on Mackay Lake. The routing across to the Snap Lake Diamond Project was established in 2000 when approximately 400 loads were hauled to site to support advanced exploration. The road was re-established during the winter of 2001, when approximately 200 loads were hauled. Some route improvements were implemented in 2001, and the current route has now been adopted as the preferred location for a perennial winter access road. There will continue to be route optimization on the lake crossings and shore approaches as information is collected on the behaviour of ice under increased traffic loading.

## 2.0 SNAP LAKE ACCESS

There are three portage segments along the approximate 36-km route from the TCWR to Snap Lake. The principal features have been listed in Table III.6-1.

**Table III.6-1**  
**Spur Road Terrain Observations, July 2001**

NUMBER	LENGTH	LOCATION	DESCRIPTION
SP-1	2.5 km	South of Warburton Bay to Lake N. or Camsell	Steep grade off first lake, bedrock-controlled topography, rough microtopography, periodic small lowlands subject to thaw degradation. Alternative routes have been used in last two years.
SP-2	200 m	Crossing to Camsell Lake	Short crossing of narrows between large lakes. Boulder covered beach ridge. Low terrain sensitivity.
SP-3	7.6 km	Camsell Lake to Snap Lake North Arm	Route winds across bedrock-controlled terrain using a number of small lakes and ponds to connect Camsell Lake to Snap Lake. Micro-topography is rough as a number of boulder fields and rock outcrops cannot be completely avoided. There are short segments of thaw-sensitive lowlands adjacent to a number of the ponds.

There are two significant portage segments along the 35 km of routing across to the mine site. The first is a bedrock-controlled hill that separates Mackay Lake from Camsell Lake. The routing follows the north arm of Camsell Lake to a selected overland route to Snap Lake. That portage grouping includes intermittent overland segments and small lakes. The winter road accesses the site from the north arm of Snap Lake via the north storage area. The on-land portion of the route is 6.5 km or 18 percent of the overall length of the spur road.

Several photographs illustrating the above points are attached (Figures III.6-1 to III.6-4). Overall, the portages have relatively rough micro-topography that could delay road opening and make it difficult to develop a smooth snow pad. There are also some potentially difficult hills for triple trailer trucks (B-trains).

**Figure III.6-1 Rough Microtopography on South End of Portage SP-1**



**Figure III.6-2 Same Location as SP-1 Looking Upslope Region of Thaw-sensitive Terrain Contiguous with Rock Outcrop**



**Figure III.6- 3 Short, 200 m, Crossing to Camsell Lake, Portage SP-2**



**Figure III.6- 4 Typical Portage Segment on Portage SP-3, Microtopography from Boulder Fields and Rock Outcrop**



### **3.0 SNAP LAKE ACCESS TOPOGRAPHY UPGRADES**

The haul truck traffic frequency to service the Snap Lake Diamond Project has been predicted to peak at 2,800 loads per season. The loads are evenly split between fuel and operations consumables. The consumables are predominantly cement required for underground mine support and backfill processing. The predominant haul units will be tractor-trailers, B-trains, and Super B-trains (dual trailer, 8-axle tanker trucks). The truck configuration follows highway-legal practice for axle loads and is consistent with trucks used on the TCWR during the 2001 season. There will be some requirement for oversize loads during the mine construction phase. These will be treated as special cases and appropriate safety precautions for ice crossings will need to be assessed and imposed.

Selective upgrading of the overland route segments will be required to accommodate the projected traffic volumes for the design mine life. The objectives of upgrading the overland portages to supplement the conventional practice of building a snow pad over the tundra are to reduce wear and tear on equipment, improve operator safety, and reduce the risk of spills. Common upgrading practice is to place a discontinuous pad of granular material that can provide a uniform base for the snow pad. The pad location is chosen to smooth rough micro-topography, such as bedrock outcrops and boulder fields. The surface padding is also configured to remove dips and humps that are particularly difficult for long trucks such as B-trains to safely navigate. Padding will not be used on wetlands, streams, or at lakeshore approaches. Padding will also not be placed over sensitive permafrost soils that are ice-rich and subject to thaw degradation unless a site-specific engineering design is prepared. Alternative, and potentially less disruptive, forms of portage upgrades will include removal of specific boulders or protruding rocks from the area designated for snow padding. These very local construction activities are carried out to reduce the risk of damage to snow removal equipment and improve truck operation safety.

Material for selective padding of the portages will be rock fill that is hauled from the mine site. The rockfill source would be either the mine site quarry or surplus mine development rock that has been assessed to ensure there is no risk of acid generation. Quarried rock is the preferred padding material for the route terrain because it will not erode and it does not inhibit surface water flow during spring freshet. The portages north of Camsell Lake, may be upgraded by selective removal of bedrock from outcrops that are present along the route.

Specific portage upgrade requirements will be identified by summer season route reconnaissance. A priority system will be established in order that construction can be undertaken in a logical sequence during the first three to five years of mine life. All



construction will be carried out during the winter season and scheduled such that it does not unreasonably effect the mine resupply haul. There will be periods both before and after the TCWR is open that would be most appropriate for pad construction. Some pad construction material haul and stockpiling could also be carried out during the normal haul season.

#### **4.0 REFERENCES**

Echo Bay Mines Ltd. 2000. Winter Road Rules and Regulations.

Echo Bay Mines Ltd. 2001. Lupin Winter Road Spill Contingency Plan.

Winter Road Joint Venture. 2001. Tibbitt to Contwoyto Winter Road Project Description Report. Prepared by EBA Engineering Consultants Ltd. on behalf of the Joint Venture. September 2001.

## **5.0 ACRONYMS**

### **UNITS**

km                      kilometre

m                        metre

### **ACRONYMS**

TCWR                    Tibbitt to Contwoyto Winter Road