

ASSESSMENT REPORT

105M-14-1

TUNDRA

PREPARED BY

DIAND TECHNICAL SERVICES

FEBRUARY, 1994

105M-14-1

TUNDRA

LOCATION

Bellekeno

Latitude: 63° 54'35"N

Longitude: 135° 15'18"W

Extension

Latitude: 63°54'31"

Longitude: 135°15'42"

Two separate mine sites, Bellekeno and Extension, were inspected and will be reported as making up the Tundra site.

Both sites are located approximately 2km east of the community of Keno Hill near the confluence of Lightning and Thunder Creeks. The Bellekeno site is closer to the creek about 1035m above sea level. The Extension site is above the Bellekeno site and is estimated to be about 1160m above sea level. Both sites are on the north facing slope of Sourdough Hill. The Bellekeno site is reached by travelling a road from Keno Hill along the south bank of Lightning Creek to a creek crossing just upstream of the confluence of Lightning and Thunder Creeks. The Extension site is reached from another road south from Keno Hill up Sourdough Hill.

Site maps showing the location of the site are attached as Appendix A to this report.

WORK HISTORY

A summary of the work history according to the Department of Indian and Northern Affairs Yukon Minfile records 105M 014 and 105M 001 is presented below.

October, 1919 - Staked as Tundra claims by A. Johnston. These claims were explored with hand pits by M. Malesich until 1926 and by W.G. Hargraves from 1927-1930.

April, 1920 - Adjoining Ram claims were staked by F. Chasni.

1927 - Johnston acquired the Ram claims and sank a 30m shaft in 1929, from which he shipped about 272 tonnes of ore.

1930-1939 - Treadwell Yukon Co. Ltd. explored the Tundra claims with short shafts and adits.

1947 - Mayo Mining Ltd. purchased the Ram claims. 79.8 tonnes of ore was shipped from the Ram claims in 1949 and 1950 from the Tundra claims.

1951 - The Tundra claims were explored with two short shafts and a 25 m adit.

1954 - The company changed its name to Maybrun Mining Ltd.

1953-1954 - The first work completed on the Bellekeno Vein system was done by Murmac Lake Athabasca Ltd. The property was later acquired by Bellekeno Ltd. which produced 18,911,000 grams of silver.

1961 - Campbell and Kennedy, financed by Newmont, did limited development to the Bellekeno property.

1964 - Maybrun Mining Ltd. leased the property to J. Holmstrom, who shipped 31.8 tonnes of ore.

1965 - The Bellekeno property was sold to United Keno Hill Mines Ltd.

1975 - J.B. O'Neill trenched the Extension property.

August, 1979 - J.B. O'Neill optioned two thirds of his interest to Skidegate Resources Ltd.

1980-1981 - Skidegate performed geochemical surveys and trenching before returning its interest to O'Neill.

CLAIMS STATUS

These sites are held by lease and are granted as follows;

<u>LEASE NAME/NUMBERS</u>	<u>EXPIRY DATE</u>	<u>OWNER</u>
Tundra (Lot 152A)	November 1, 1999	Romith Investments Ltd.

The major commodities identified at this site are silver, lead, and zinc.

Galena, tetrahedrite, and sphalerite occur with siderite gangue in erratic lenses within a vein that cuts the Mississippian Keno Hill quartzite.

CURRENT SITE CONDITIONS

The two mine sites are on a north facing slope of Sourdough Hill approximately 2km east of the community of Keno Hill. The Bellekeno mine is at the base of Sourdough Hill whereas the Extension mine is mid-way up the slope of Sourdough Hill. At the time of inspection on 1993/07/22 placer mining was ongoing just below the Bellekeno site in Lightning and Thunder Creeks. Two roads have been constructed to the Bellekeno site, one on each side of Lightning Creek. The road on the south side of Lightning Creek has been blocked to prevent vehicle access, whereas the road on the north side of Lightning Creek is open to vehicle traffic and was being used at the time of inspection.

Soil conditions at both sites appear as a granular and silt till overlying weathered bedrock.

Vegetation is a mixture of black spruce, willow, and alder. Fireweed was predominant and in flower at the time of inspection.

Both sites were well drained, however the Bellekeno site is just above Thunder Creek and the toe of the tailings from this mine appears to form the top of the bank. No nearby surface drainage was observed close to the Extension mine site.

The Bellekeno mine is the larger of the two developed sites with the most remaining infrastructure. The Extension mine appears to have been developed much earlier than the Bellekeno site and remaining infrastructure is much older.

Remaining infrastructure from each site is listed separately.

Bellekeno Infrastructure

Remaining material and infrastructure at the Bellekeno mine is located within a confined area surrounding the adit and waste dump area measuring approximately 100x300m. Each component of the site is described separately.

Buildings

Three wood frame metal clad structures are left on-site. These structures include;

- 6.7x15.2m building complete with a Caterpillar electric generator coupled to air handling equipment. Piping extended from this building to the mine adit, a distance of approximately 200m. This building also housed a large Gardner Denver wheeled compressor. Overhead electrical service extended from this building to the adit and beyond.
- 3.7x30m long building extending from the adit and used as the ore and rock waste dump. This structure was supported on heavy treated timber to withstand the impact of dumping the ore and rock waste. The railway track from the adit extended to the far end of this structure. Adjoining this section of building at a right angle was a 12x20m section that extended to the entrance to the adit. This section of the building housed a large electrical panel with switching gear. The adit at the end of this building was sealed off and inaccessible.
- 5x16m lunch/change room. This building was locked at the time of inspection.

Adit

The adit is well sealed with timber framing and insulation. Access does not appear possible.

Equipment

A number of pieces of equipment was found on-site, including;

- 10 ore cars (8 are on the tracks inside close to the ore dump, 2 are outside the ore dump). One ore car is equipped with a loading bucket. **One ore car is fitted with a 681 litre "Tidy Tank" that contains an estimated 450 litres of diesel fuel.**
- Caterpillar generator complete with air handling equipment located in the workshop/generator building,
- wheeled Gardner Denver air compressor located in the workshop/generator building,
- electrical poles and service to the buildings and extending up the slope above the mine **as well as a number of transformers** located in a separate fenced area,
- approximately 60m of 900mm diameter air ducting along with a small fan building,

Fuel Storage

The following fuel storage tanks were found on-site;

- 2.8m diameter x 3.05m high fuel storage tank. Tank appeared empty at time of inspection. This tank was contained in a wood frame dyke and lined with a plastic liner. This liner is quite brittle and may leak. The tank is supported on levelled wood timbers beneath the liner.
- 1.2m diameter x 1.5m long fuel tank inside workshop/generator building.
- 2-204 litre barrels of hydraulic oil inside workshop/generator building.
- 681 litre Tidy Tank on an ore car with an estimated 450 litres of diesel fuel remaining.

Metal Waste

A number of pieces of metal were found on-site including;

- 47 pieces of 100mm diameter, 6m long pipe,
- approximately 50 pieces of wire mesh each measuring 1.5x3.0m,
- 3 pieces of I-beam,
- approximately 10 pieces of 3m long rail.

Miscellaneous

A number of other pieces of material was found on-site including;

- coils of pressure hose,
- a few empty 204 litre barrels,
- timber cribbing,
- rolls of cable,
- several empty cable spools,
- piping,

- pressure tanks,
- and some small tools.

Waste Dump

Waste rock has been dumped downslope of the adit and loadout structure. This waste rock has been spread over a length of at least 300m between the mine and Thunder Creek. The toe of the rock waste approaches the top of the bank of Thunder Creek at the upstream side of the site. The waste rock has been flattened and is used as a driving surface to get around the mine.

Extension Infrastructure

The Extension site was a much smaller development than the Bellekeno site and much less material and infrastructure has been left behind. The remaining material and infrastructure found at this old mine site is listed below.

Buildings

Three old wood frame buildings remain at the mine site and include;

- a 1.8x2.4m plywood clad building. This building was locked and contained what appeared to be an explosives magazine.
- a 2.4x4.8m board clad building. This building is very old and deteriorated.
- a 4.9x7.3m board clad building once used as a dry building. It contains five 204 litre barrels supported in the roof structure, which were used for water storage. A barrel in the middle of the floor remains connected to the overhead barrels.

Adit

An adit sealed with wooden doors and a metal screen across the entrance prevents any access. Rail extends from the adit.

Miscellaneous

Alot of material has been scattered around the site, including;

- pieces of metal,
- old empty barrels,
- an old battery,
- a stack of wire mesh (1.5x3.0m sheets),
- an empty 2270 litre fuel barrel, and
- **one 204 litre barrel containing about 100 litres of hydraulic oil.**

Waste Dump

Waste rock was typically dumped downslope and extends between 50-100m downslope of the adit. Within the waste rock area a timber loadout was constructed for loading ore.

Site photographs showing current site conditions are attached as Appendix B to this report.

RECOMMENDATIONS

Recommendations for the Bellekeno and Extension mines are provided separately. Past exploration and mining has resulted in extensive disturbance to both sites.

Bellekeno

A significant amount of infrastructure and waste product has been left at the Bellekeno site and the need to complete various components of clean-up is prioritized below.

Above ground infrastructure left behind includes buildings, equipment, fuel storage tanks, and electrical service to the site. Roads and a large rock waste dump are also in place from the past mining activity. Recommendations for each component of infrastructure is presented below.

Buildings

The metal clad buildings are deteriorating very slowly and are expected to last for many years to come. These buildings are not causing any ongoing damage to the environment. The adit entrance is also protected with a building covering the access. It is recommended that a clean-up program be initiated for these buildings only if **LOW** priority sites are considered for clean-up. Removal of the buildings, if initiated, should include;

- removal of all rail, piping, and electrical services,
- removal and salvage of all metal cladding from the site. It may be possible to reuse this metal again,
- removal of all lumber and wood framing to either be salvaged or disposed on-site, and
- removal of the timber foundations.

Equipment

All equipment would need to be loaded and hauled from the site. Some equipment such as compressors, electrical generators, ore cars, and locomotives may have some residual value. Leaving the equipment on-site should not cause any environmental hazard and is considered a **LOW** priority.

Fuel Storage Tanks

Very little hydrocarbon products were found on-site and any spillage that could occur would cause minimal damage to the environment, however it is recommended that any hydrocarbon products be removed. All barrels and tanks, once empty, should be removed. A **MEDIUM** priority should be placed on removing these products and tanks. It was observed that hydrocarbon products had been spilled around the generator building. The ground was stained all around the area of this building. This spillage likely took place when the mine was in operation and there is no evidence to indicate that any recent spilling has taken place. It appears that this area of ground contamination is quite small, however the extent of this contamination could only be confirmed by completing a soil sampling and analysis program. This type of program should be considered if it is suspected that the environment and/or people are being impacted downstream of the site, and there are negative consequences from this damage. A site remediation plan can only be established once the sampling program and analysis is complete.

Electrical Service

Overhead electrical services extended across the site from a base of transformers located at the north side of the site. It is recommended that these transformers be tested to verify whether or not any polychlorinated biphenols are present in the oil. The necessity to remove these from the site can be determined once this testing is completed. This testing is considered a **HIGH** priority.

Rock Waste Dump and Roads

The large rock waste dump consisting of resident rock has been placed between the adit and the creek. No chemical treatment of this rock is evident as there is no mill present or any tailings pond. It appears that this rock is stable and is not causing any environmental problems. Site remediation of this waste rock, such as revegetation, is not considered practical. It is recommended that this waste rock be left in its present condition.

Similarly, the roads do not appear to be causing any ongoing environmental damage, and any site remediation would not improve conditions or needs to be considered at this time.

Extension Mine

The Extension mine was not a large facility, is quite old, with little remaining. Recommendations for each component of the site follows.

Buildings

All buildings are old, constructed of wood, and deteriorating. These buildings could be burned to eliminate any future hazard. Any metal, such as the barrels, etc. inside these

buildings should be removed and hauled from the site prior to any demolition of these buildings. Removal of these buildings is considered a **LOW** priority.

Adit

The adit has been well sealed and does not appear to present any hazard at this time.

Explosives Magazine

The owners of the explosives magazine should be contacted to confirm any contents and remove it from site as soon as possible. This should be considered a **HIGH** priority.

Metal Waste and Hydrocarbons

Removal of the metal waste should be completed if a general clean-up program is initiated in the area, however this is considered a **LOW** priority. Similarly, the one barrel of oil remaining on-site should be removed, however because of the very small volume present, this is also considered a relatively **LOW** priority.

Rock Waste

The rock waste placed downslope of the adit appears to be stable. It is recommended that this rock waste be left in its present condition.

SITE SUMMARY

It is recommended that the high priority concerns at the two mine sites need to be addressed as soon as possible. These items include;

- verifying the contents of all transformers remaining at the Bellekeno site, and
- removal of the explosives magazine from the Extension site.

It is recommended that work proceed at these two sites in order of identified priorities, rather than initiating total clean-up, unless this can be completed in total.

APPENDIX A

SITE LOCATION MAPS



SITE NAME: **TUNDRA**

SITE NUMBER: **105M-14-1**

MAP NUMBER: **105M**

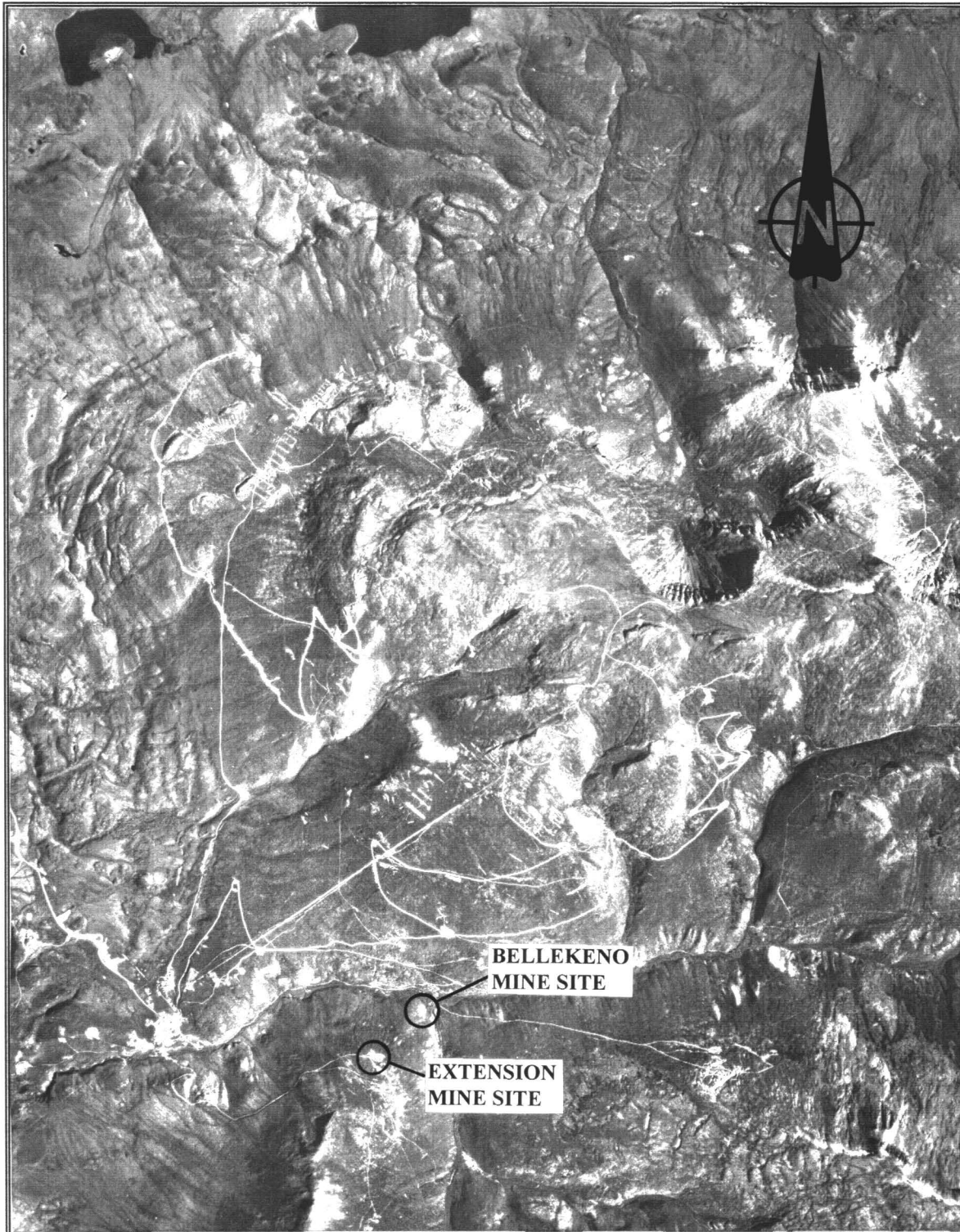
MAP NAME: **MAYO**

MAP SCALE: **1:250000**

SITE LOCATION:

LATITUDE: **63° 54'35"N**

LONGITUDE: **135° 15'18"W**



SITE NAME: **TUNDRA**

SITE NUMBER: **105M-14-1**

AIR PHOTO NUMBER: **A19980-11**

YEAR: **1968**

AIRPHOTO SCALE: **1:56000**

SITE LOCATION:

LATITUDE: **63° 54'35"N**

LONGITUDE: **135° 15'18"W**

APPENDIX B

SITE PHOTOGRAPHS



BELLEKENO MINE SITE



MINE LOADOUT AND WASTE DUMP



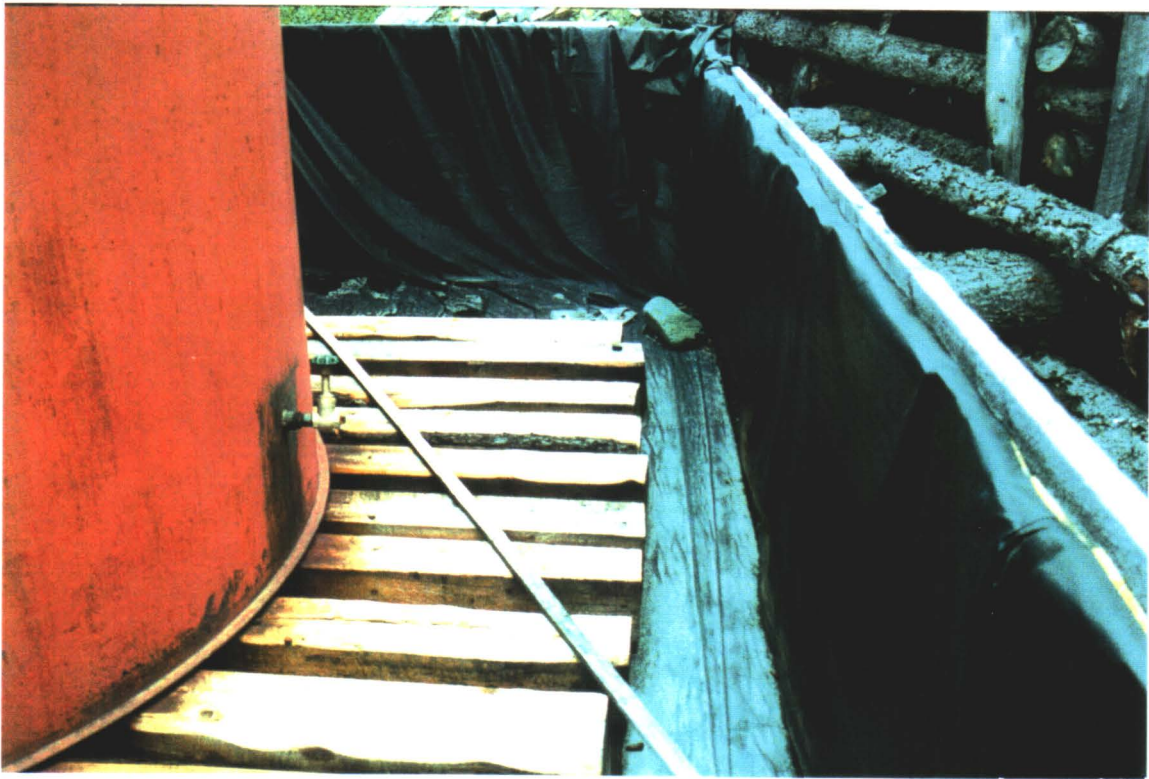
LOADOUT, ENTRANCE TO ADIT, AND STAFF BUILDING



GENERATOR BUILDING (NOTE FUEL SPILL)



FUEL TANK



BASE OF FUEL TANK AND DYKE LINER



**ENTRANCE TO ADIT, ELECTRICAL SWITCHING GEAR, AND LOCOMOTIVE
INSIDE MINE ENTRANCE BUILDING**



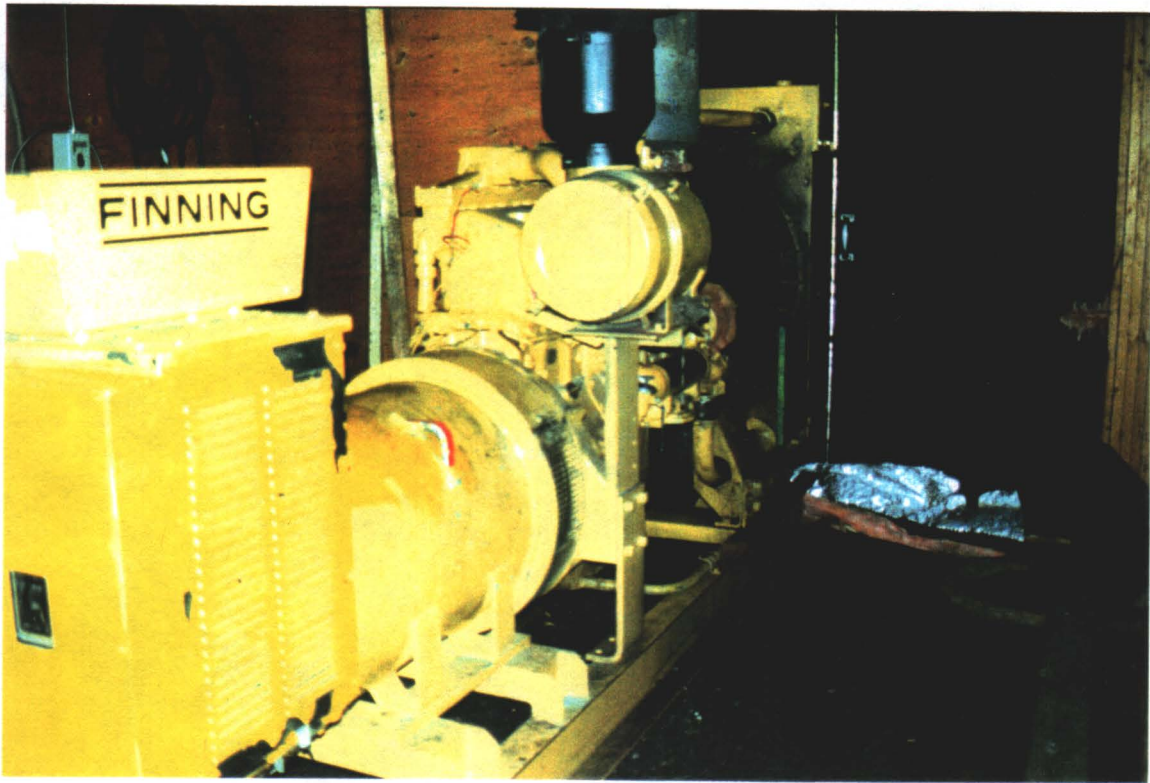
INTERIOR OF LOADOUT WITH ORE CARS AND FUEL TANK



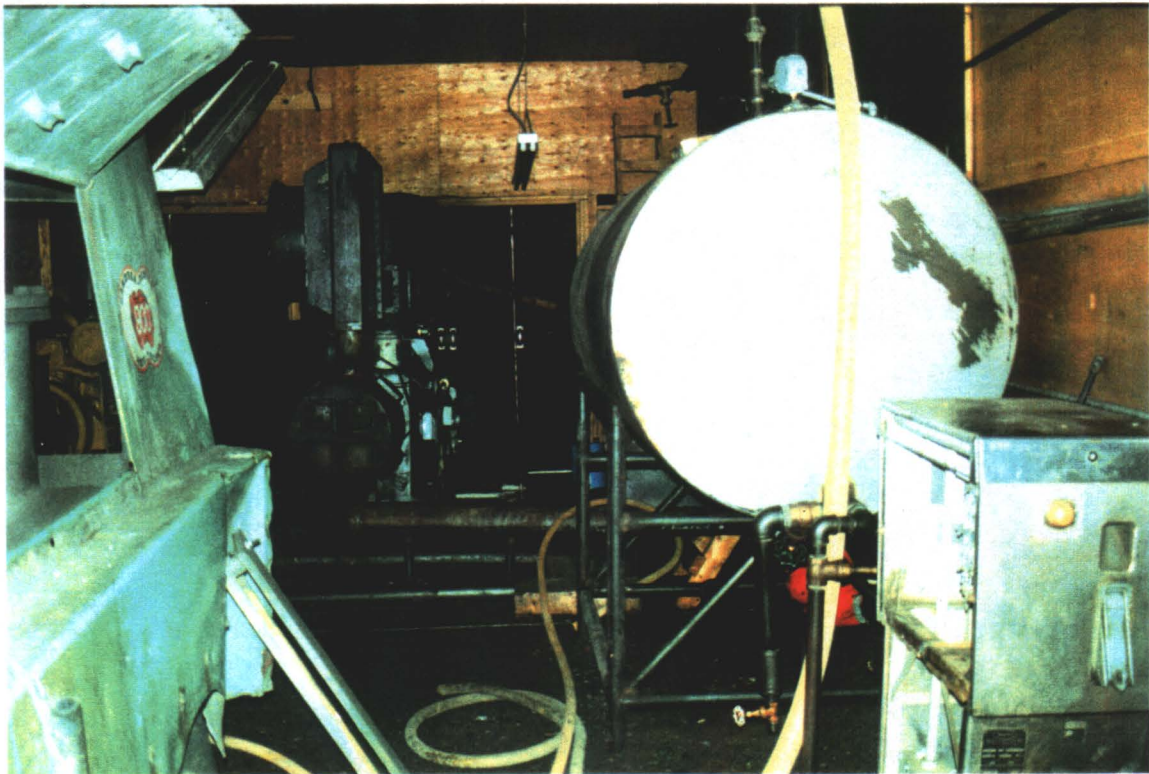
GARDNER DENVER DRILL LEFT ON-SITE



WASTE MATERIAL OUTSIDE LOADOUT BUILDING



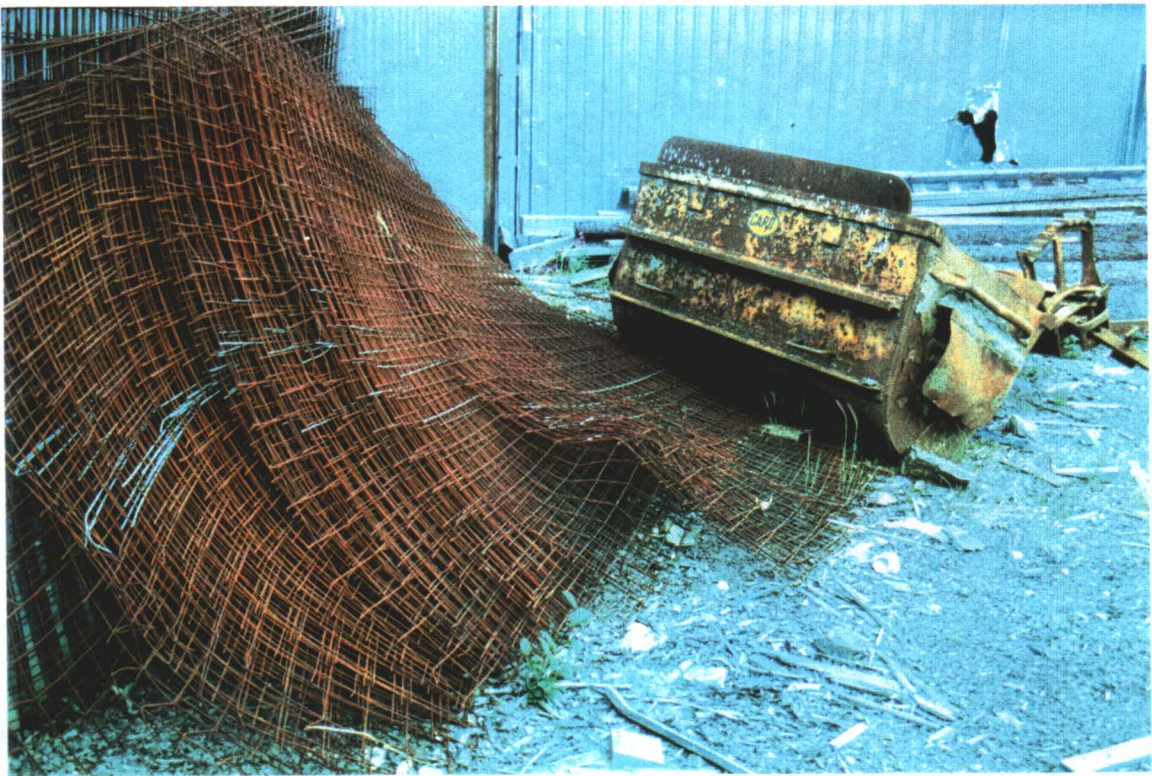
CATERPILLAR GENERATOR INSIDE GENERATOR BUILDING



FUEL TANK, FUEL PUMP, AND AIR HANDLING EQUIPMENT



OPEN OIL BARRELS CONTAINING HYDRAULIC OIL INSIDE GENERATOR BUILDING



WIRE MESH AND ORE CAR



ADIT TO EXTENSION MINE AND WAREHOUSE WITH EXPLOSIVES MAGAZINE



INTERIOR OF DRY BUILDING



LOADOUT ON WASTE ROCK



FUEL TANK AND DRY BUILDING



STACK OF WIRE MESH



PIPE AND OTHER METAL WASTE NEAR ADIT