

DETAILS OF INTERESTING CLAIM

(From Risk Control and Claims Handling in Advance Loss of Profits Insurance -
IMIAPaperWGP11 (00)E)

No: DOIC29 (CAR)

Type of Insurance:

CAR

Description of damaged item:

The damage resulting from overheating of two motors

Cause of Loss:

(1) Faulty operation

Claim Cost

137 US\$ Mio

Description of Incident and Loss Prevention Measures initiated:

The two material damage losses occurred during the establishment of an open pit copper mining project.

The first loss occurred in the process plant where Sulphide Ore is treated at a rate of 60.000 tons per day in two parallel grinding circuits, each comprising a 32 foot semi- autogenous-grinding (SAG) mill and a ball mill. The SAG mills are driven by two 3.550 kW motors sharing a single cooling system, which consists of a pair of ventilation fans, one for operation and one for standby, connected to a single duct, which then splits to feed the two motors through their bases. Each of the motors is fitted with a cycle converter system, which is used to align the motor rotor poles with the stator poles. The cycle converter system, which is important to maintain the maximum efficiency of the motors, includes a tachometer, a resolver and a solid state circuitry. The operation of the mills is normally controlled by the Mill Unit Controller (MUC).

Circumstances and Causes of Loss

The loss under consideration was the result of the overheating of the two motors, which drive the mill on Line 1. The damage occurred as a result of incorrect operation during tests carried out on the SAG mills. The overheating occurred because the ventilation system of the motors were not operating at the time of the tests, as a result of which the motors ran unvented for approximately one hour. During the tests carried out prior to the loss, the mill drive had been run disconnected from the MUC, to allow work to be carried out in parallel, to tune the drive and complete the checks to the control system. Accordingly, communications between the MUC and the drive, that would normally be active in the production configuration, were not active during the tests.

Immediately after the loss, the contractor disassembled the motors and air freighted the poles to the manufacturer's plant. Each of the poles required a complete copper rewinding, followed by epoxy coating and final baking, drying and testing.

Mechanical completion of mill Line 1 was achieved and mineral loads commenced two and half months later.

Following the initial 30 hours testing with an approximate load of 400 tons per hour, the line was stopped in order to carry out programmed maintenance which triggered a sequence of events which for the purpose of this example can be summarised as the second loss event.

Two weeks later an attempt was made to commence production on Line 1, but the mill tripped

as a result of pole misalignment of the "A" drive motor. Following initial tests, it was found that the problem was due to the failure of the tachometer. The unit had to be replaced yet there were no spares at the mine and a replacement tachometer was immediately ordered at the manufacturer's plant. The faulty tachometer (Tach 1) was sent back to the manufacturer for repairs.

The new tachometer (Tach 2) was received at the mine one week later and was immediately installed onto the "A" motor of SAG mill 1. During the final motor pole alignment and motor testing the tachometer problem reappeared with Tach 2. In order to locate the source of the problem, on the two weeks later Tach 2 was exchanged with the unit on motor "B" and the mill was tested. The alignment problem reoccurred, but on this occasion it affected motor "B". This was the final proof that the replacement tachometer (Tach 2) was faulty as well and was immediately sent back to the supplier for further investigations.

In the meantime, the original supplier of the tachometers, had disassembled the first tachometer (Tach 1) at their premises and had found that internal mechanical parts had moved on the shaft of the tachometer, partially disengaging the gears. In addition, metal shavings throughout the tachometer were found. Finally, the unit's output circuit board had short circuited, as a result of coming into contact with the metal shavings. This prevented the unit from sending accurate output signals to the circuitry. At Tach 2 a similar internal problem was discovered.

Both tachometers were repaired and returned to the site and SAG mill Line 1 was returned to service operating at an average throughput of 1.400 tons per day after three months from starting the loss.

It was reported by the main contractor that the first sign of damage to the tachometer installed on motor "A" of SAG mill Line 1 was observed when the rotors were reinstalled on the motor, following the loss dated 10th September 1998. It has therefore been indicated that the cause of the damage to Tach 1 was an impact on the end of the tachometer shaft. The result of this impact was the dislodging of the lock ring which holds the mechanical gearing together, within the tachometer housing. Once dislodged, the gears within the unit will have lost their alignment and become disengaged. The damage to Tach 2 appeared to be the same as the damage to Tach 1.

Outline the interesting or unusual aspects of this claim or problems experienced during settlement:

A Contract Works All Risks Insurance followed by an Advance Loss of Profits Insurance were issued for all permanent and temporary works related to the construction, erection and testing of all mining facilities including the mine, process plant (consisting of two mill lines of production), infra-structure, concentrate pipeline and filter plant.

The original insurance period of the policy was two and half year inclusive of two months of testing and commissioning any one unit or section of the plant and two months for works in commercial operation.

The Advance Loss of Profits Insurance was subject to one time excess of 30 days and a 9 months maximum indemnity period from the scheduled dates of commencement of commercial operation of the plant. Commercial operation was defined as the date on which each of the two production lines reaches 60% of its design capacity.

Cause Review and Policy Liability

Investigations into the circumstances of the first loss have revealed that the overheating of the SAG mill motors was covered in terms of the Material Damage Section of the Policy. As far as the second loss (damage to tachometers) is concerned Insurers were initially of the view that the tachometer loss had been caused by an inherent design or manufacturing defect which remained latent until being put into service. Furthermore, the second loss was reported to Insurers only on 18th December 98 despite the fact that the problem with the tachometer had already been experienced on the 4th November. At the time of the notification of the loss the damaged tachometers had been sent already to the manufacturer and were not longer available

for inspection. Thus, the Insured was in fact not able to prove that an indemnifiable material loss did occur on site. Nevertheless, in the absence of any proof for a latent defect and also because the possibility of damage to the tachometers during shipping could not be proven it was finally accepted by the Insurers that the most likely cause for the tachometer loss was faulty handling during the dismantling/reassembly of the damaged SAG mill motors. Thus, both of the physical losses qualified for potential delays in terms of the Advance Loss of Profits cover.

Whilst repairs were being undertaken on Mill No. 1's damaged motors, the Insured began already testing and commissioning work on SAG mill Line 2. Despite the fact that the Loss of Gross Profit Insurance was according to the Policy independently applied to both SAG mill lines, it was recognized that the testing and commissioning of Line No.1 benefited from the experience made with Line No. 2.

Calculation of Loss

The financial loss was calculated on the basis that the period of delay was the period between the anticipated date of commencement of operation for Line 1 and the actual date of the commencement of operation, i.e. the date when Line 1 reached 60 % of its design capacity which is the output of 18,000 t/day of the installed capacity of 30,000 t/day for Line 1.

However, the date on which commercial operations was achieved was affected also by other (not indemnifiable) events, unrelated to the damage to the SAG mill motor and the tachometer problem. Bearing this in mind, a way to net out the delay resulting from the motor and tachometer losses, from the other, unrelated problems had to be found. Furthermore, the policy was unclear to the effect over which period the 60 % design capacity had to be achieved. Whilst Insurers were of the opinion that the date on which Line 1 reaches the output of 18,000 t/day for the first time should be the date of commencement of commercial operation the Insured believed - but this was not documented in the policy - that the achievement of the 60% design capacity should be over a period of 15 days. The parties finally agreed that a fair and reasonable way to determine when commercial operations were achieved would be to use a polynomial projection.

In consideration of the points above the delay period and the equivalent period were agreed at 48 days for both captioned losses. As per policy conditions one waiting period was applied to the delay arising from the SAG mill motor and tachometer losses. Considering the Rate of Gross Profit and the Turnover achieved during the equivalent period the net settlement under the Advance Loss of Profits Section of the Policy was calculated at USD 4,668,000. The Insured's own original loss calculation and expectation corresponded to USD 12,000,000.

After the first loss (damage to the motors) an extension of the policy was asked for by the Insured. The extension was granted, however, without Insurers having requested the application of a new time excess, despite the fact that the original time excess had been absorbed already as the result of the first loss . Would there have been a new time excess applied at the prolongation of the policy the net settlement in terms of the Advance Loss of Profits Section of the policy would have been nil. In this respect it should be noted that if as a result of a delay in start - up as a consequence of an indemnifiable loss under the material damage section the period of insurance is to be extended, a new time excess is to be fixed and agreed upon in writing.

The agreed net settlement under the Material Damage Section of the policy for the SAG mill motor loss was USD 132,056. There was no physical damage payable in terms of the policy in respect of the tachometer loss since the repair costs fell within the deductible.

CODES

1. Type of Insurance

M - Machinery Breakdown

BE - Boiler Explosion

LP (M) M - Loss of Profits

ALOP (DSU) - Advance Loss of Profits

EAR - Erection All Risks

CAR - Contractors All Risks (Civil)

G - Guarantee

EE - Electronic Equipment

O - Other Classes

2. Cause of Loss

(1) Faulty operation

(2) Faulty material or workmanship

(3) Faulty design

(4) Other internal causes

(5) Fire

(6) Explosion

(7) Storm

(8) Earthquake

(9) Other external causes

(10) Other causes or unknown