

DETAILS OF INTERESTING CLAIM

(From Human Factors in Engineering Risk – IMIA Paper WGP8 (00)E)

No: DOIC36 (M)

Type of Insurance:

M

Description of damaged item:

Macro crack of a Kaplan hydroelectric turbine blade

Cause of Loss:

(1) Faulty operation

Claim Cost

Description of Incident and Loss Prevention Measures initiated:

The prime cause of the failure was inadequate radiusing at the blade root from where the crack propagated (a substantially increased radius was made on replacement blades). The turbine had permanent vibration equipment fitted to the highest standard incorporating data collection and trend analysis. Indeed, on investigation, the increase in vibration could be clearly seen several months prior to the discovery of the damaged blade and action had been taken, albeit that this was entirely inappropriate. The monitoring equipment had indicated a far greater increase in vibration at the upper generator bearing and the maker's representative had, following investigation and discovery of no fault with the generator electrically, balanced the generator unit as a whole. At this stage, and until several days of operation later when the vibration levels continued to increase, no attempt was made to examine the turbine (a relatively easy task requiring only the removal of an inspection cover). Even following the discovery of the failure the question had not been asked by the client - why didn't we discover the fault with all our sophisticated equipment? Here, it is clear that there were design and operational aspects to the loss and, in attempting to analyse from a cultural perspective, the picture becomes more complicated. Manufacturers and the service engineer were German and the machine was located in South America where in each case there should have been a high level of uncertainty avoidance. It would have been expected therefore that precautions against loss would have been taken at the design stage and through to the investigation of all possibilities for the cause of vibration by the maker's service engineer. It would also be assumed that the site would have invested in thorough training. A complete explanation is not always possible, the site seemed quite well managed and the overall climate was good, but with consideration of the context in which the operators were operating, it became immediately apparent that the individuals had not received sufficient training. What's more they seemed aware of this but had not tackled their superiors – perhaps a reflection of the power distance continuum. It was here then that the focus for improvement was made.

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